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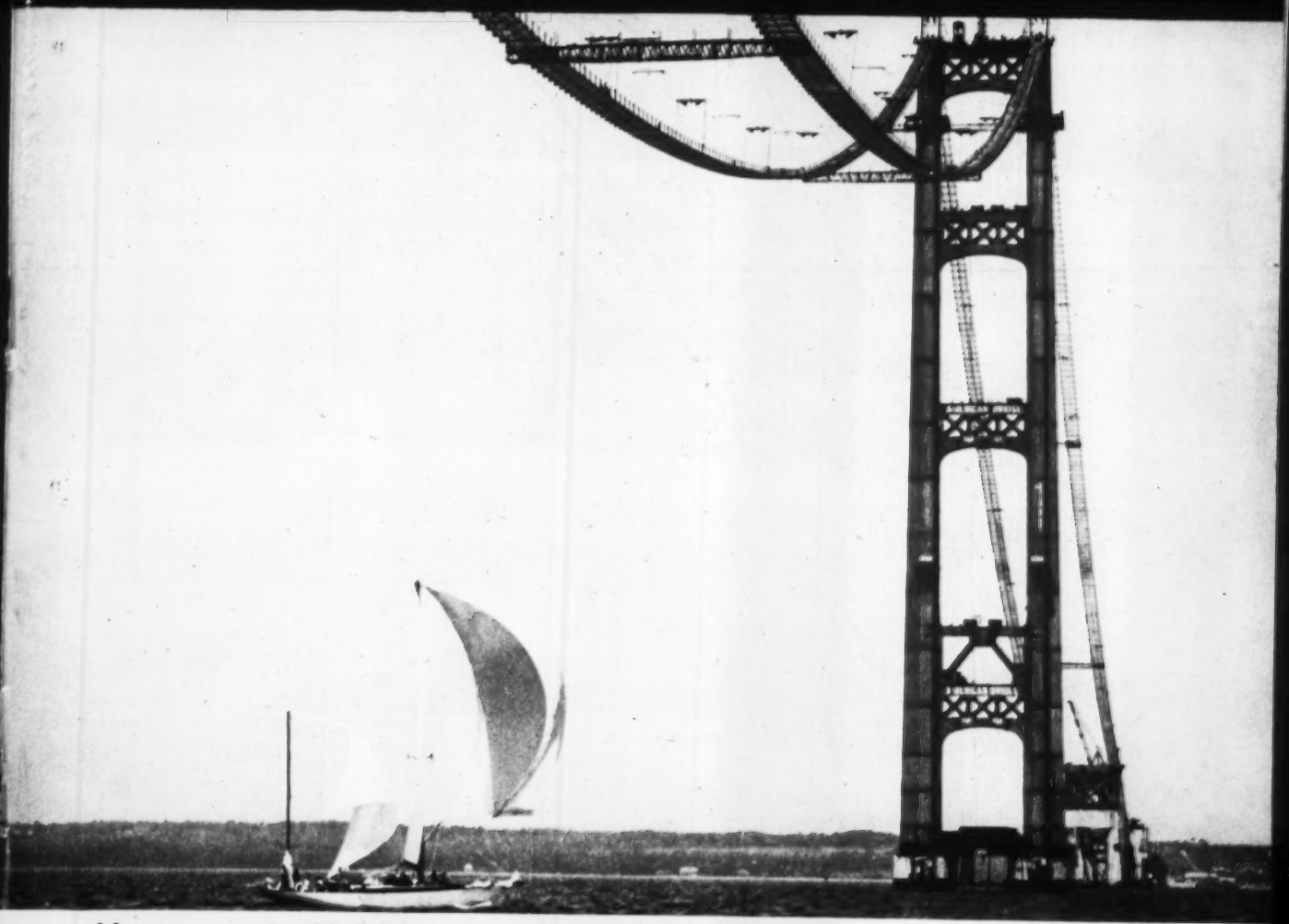

How to spin 11,000 tons of cable in 78 days (p. 55)

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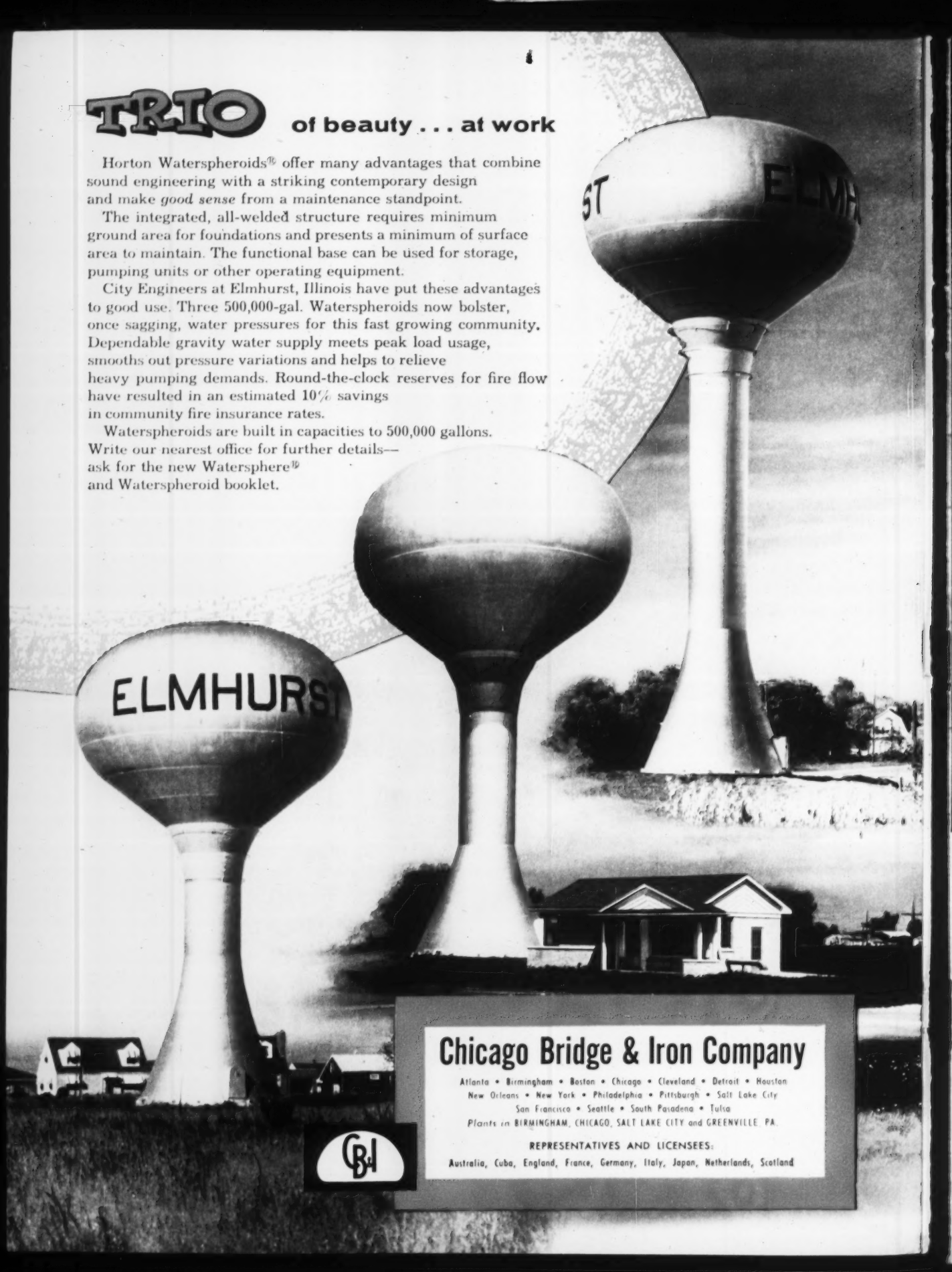

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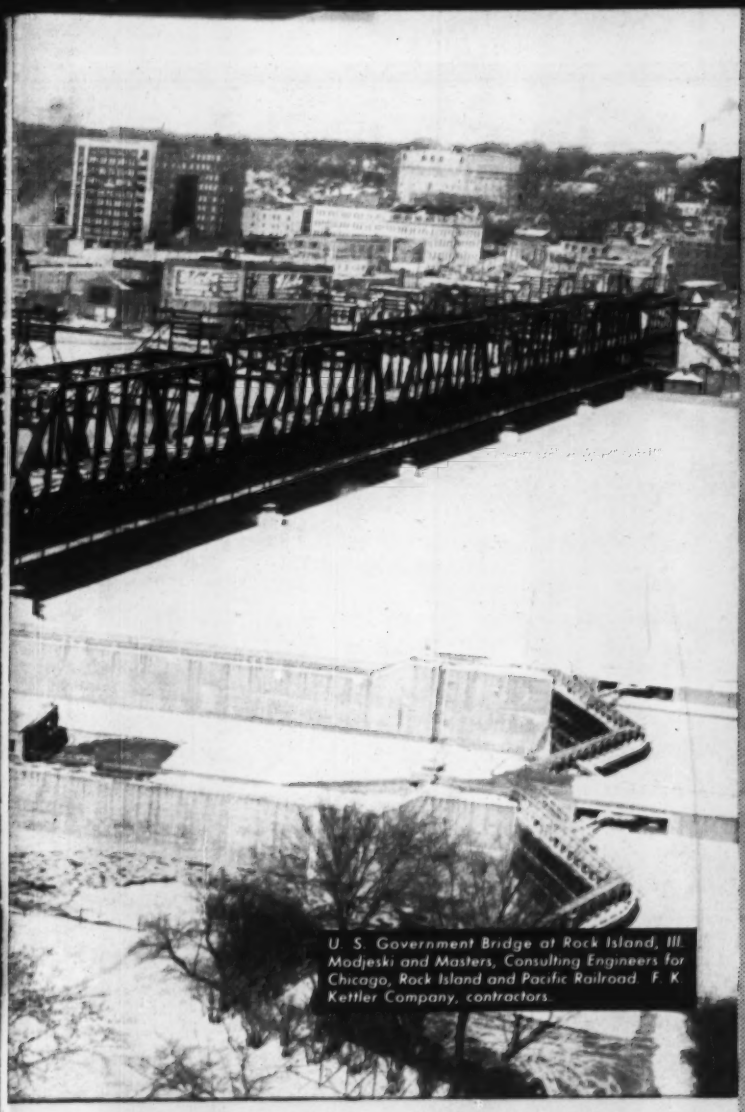
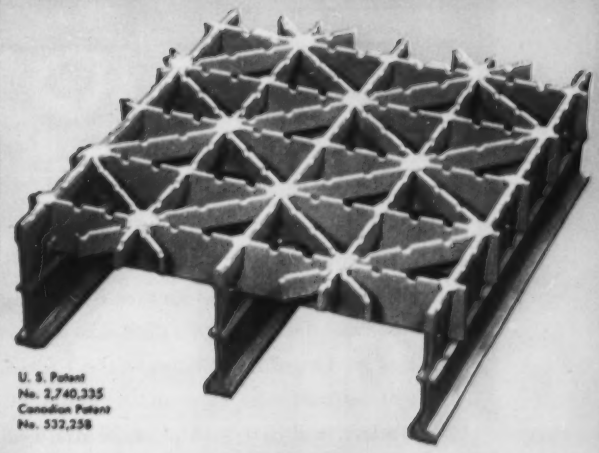


U. S. Government Bridge at Rock Island, Ill. Modjeski and Masters, Consulting Engineers for Chicago, Rock Island and Pacific Railroad. F. K. Kettler Company, contractors.

Exner Bridge, Gainesville, Georgia — see left, below, for over all view

from KERRIGAN a Minimum



U. S. Patent No. 2,740,335 Canadian Patent No. 532,258

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Reader Comment

Laterals Now, Trunks Later

SIR—The report in ENR Jan. 17, p. 46, "Laterals Now, Trunks Later," highlights one of the most serious problems facing our country today. Not only are sanitary facilities inadequate now, but the pressure of growing communities is constantly adding to the burden.

The National Association of Home Builders agrees completely that septic tanks should never be installed in areas where they cannot function properly, or in areas where municipal or privately owned sewerage systems are feasible. However, in such areas where septic tanks do function properly, and where it is economically desirable to use them, the home owner should have the benefit of the savings possible to him.

The refusal to allow the use of small treatment plants, both by state and local governments, is one of the most serious obstacles to be overcome. Even though these plants have been successfully operated in some areas, they are still arbitrarily banned in many others. Admittedly, supervision to insure proper maintenance does require some effort and expense. It is, however, hard to rationalize the refusal of government to assume the responsibility to safeguard the health of its citizens, which is certainly as much a legitimate responsibility as the furnishing of police and fire protection.

Your organization is to be commended for alerting the public to the seriousness of this problem.

FREDERICK E. WEGNER
Director, Community Facilities
National Association of Home Builders

Why Public Power?

SIR—In your editorial in ENR Feb. 7, under the heading "Better Late than Never," you make a statement better fitted to too many young engineers neglecting in their thinking the human values: "It will never be clear why New York's elected officials were so obsessed

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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with the idea that only public power at Niagara would serve the public."

The answer, if one has contacted the "man on the street," is simple: The elected officials depend on him for his vote, and this man is sure that public power is cheaper than that privately made.

The advertising of the public service companies refuting this belief has been poor. Tennessee Valley Authority has spent large U.S. funds advertising its ability to produce electrical power very cheaply. To show how widespread is this belief in cheap public power, recently the NEW YORK TIMES in an editorial quoted the millions that TVA had turned over to the U.S. Treasury, but neglected entirely to mention the great amount it had taken out of the Treasury, and the lost interest and taxes that would have come from a privately owned plant.

Even upper officials of some of the foundations have this prevalent belief that public operated power plants can produce power much more cheaply than public service companies regulated by government commissions. Your staff should be clear on this subject.

GEORGE R. WADLEIGH
Consulting Engineer
New York, N. Y.

(Through error, only parts of the following letters were presented in last week's issue. With apologies to Messrs. Gudgeon and Frazier they are presented here in full.)

Some Intriguing Questions

SIR—I have been a regular reader of your magazine for 15 years and have read the back numbers as far as about 1926. Some recent articles have prompted this, my first, letter to you.

A recent article in ENR shows a prestressed concrete lift slab and brings these queries:

1. What effect has differential settlement on the slab stresses?

2. What is the effect of long term creep (and shortening) on the column stresses?

Several articles in ENR show the erection of some prestressed bridge beams. The query:

3. What allowance has been made in the beam design for the shrinkage of the in-place road slab?

Another article showed a "new" technique of curving wires in pretensioned units. I do not wish to be a killjoy, but I saw a building constructed with this technique in Holland as far back as about 1950. The idea was discarded after the one ambitious attempt.

I spent almost two years with the Freyssinet organization in Europe and am helping to pioneer prestressing here in the Far East. Already, I have finished a 54 ft span motor workshop floor. Also nearing completion is a unique 3 story steel-framed addition to an existing 4 story building. In this, I used precast, pretensioned floor units screeded over.

DONALD K. GUDGEON
Consulting Engineer
Singapore, Malaya

Philadelphia Parking Plans

SIR—My attention has been directed to an item appearing on page 6 of your issue of Oct. 26, 1956, concerning Philadelphia's latest actions in connection with its parking garages. For the record, it seems to me this item is misleading.

The implication in the headline that the city will give up its "public parking business" is incorrect, since there will be no change in either ownership or principle of operation. The fact of the matter is that since the first few months of operation the garages have been under contract with private management—the only difference is that under the new contracts, the length of the lease is extended and there is a degree of profit sharing made possible.

This has been the plan of the Parking Authority for some time, and its effectuation is a signal not of failure, but rather of putting the garages in a sufficiently sound position so that a satisfactory management bid could be secured.

CHARLES H. FRAZIER, CHAIRMAN
Urban Traffic and Transportation Board
The City of Philadelphia

CALENDAR

Building Code Conference, St. Louis University, St. Louis, Mo., April 5 and 6.

American Welding Society, Hotel Sheraton, Philadelphia, Pa., Apr. 8-12.

Building Research Institute, sixth annual meeting, Drake Hotel, Chicago, Ill., April 15-17.

Western Concrete Pipe Association, annual meeting, Hacienda Motel, Fresno, Calif., April 18-19.

Sanitary Engineering Conference on Solids Handling and Anaerobic Digestion, Manhattan College, New York City, Apr. 24-26.

International Commission on Irrigation and Drainage, 3rd Congress, Sheraton-Palace Hotel, San Francisco, Calif., April 29-May 4.

Building Officials Conference of America, Inc., 42nd Annual Convention, The Jung Hotel, New Orleans, La., May 6-9.

American Water Works Association annual conference, Atlantic City, N. J., May 12-17.

12th Purdue Industrial Waste Conference, Purdue Memorial Union Bldg., Lafayette, Ind., May 13-15.

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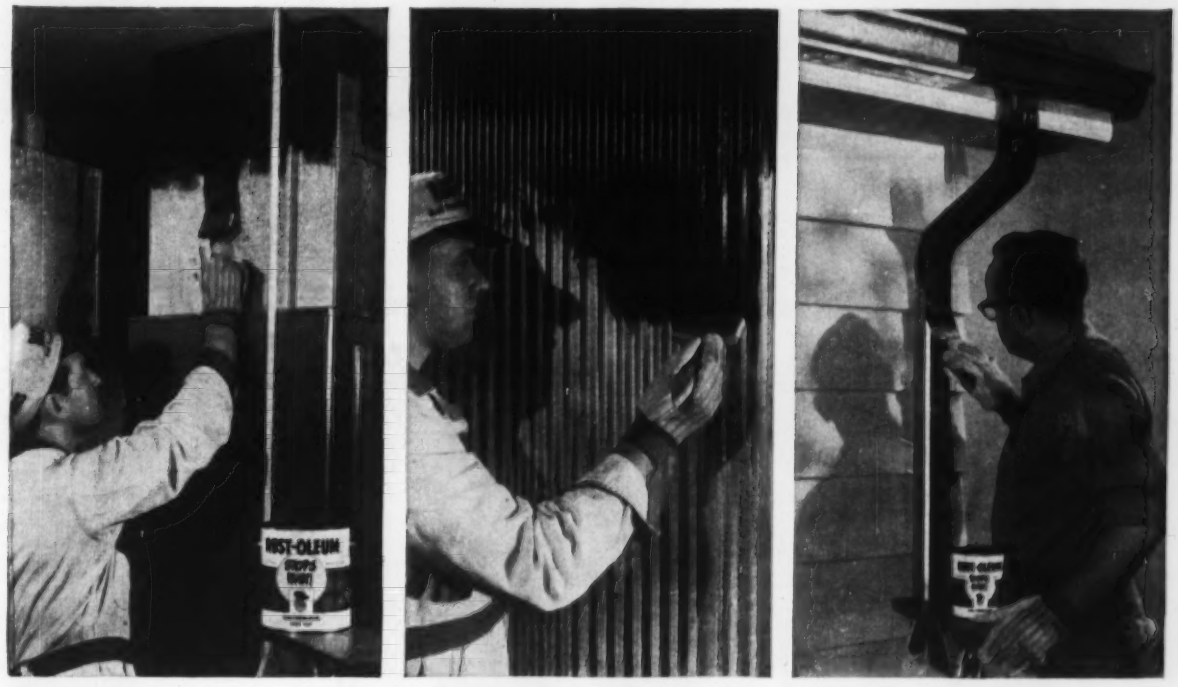

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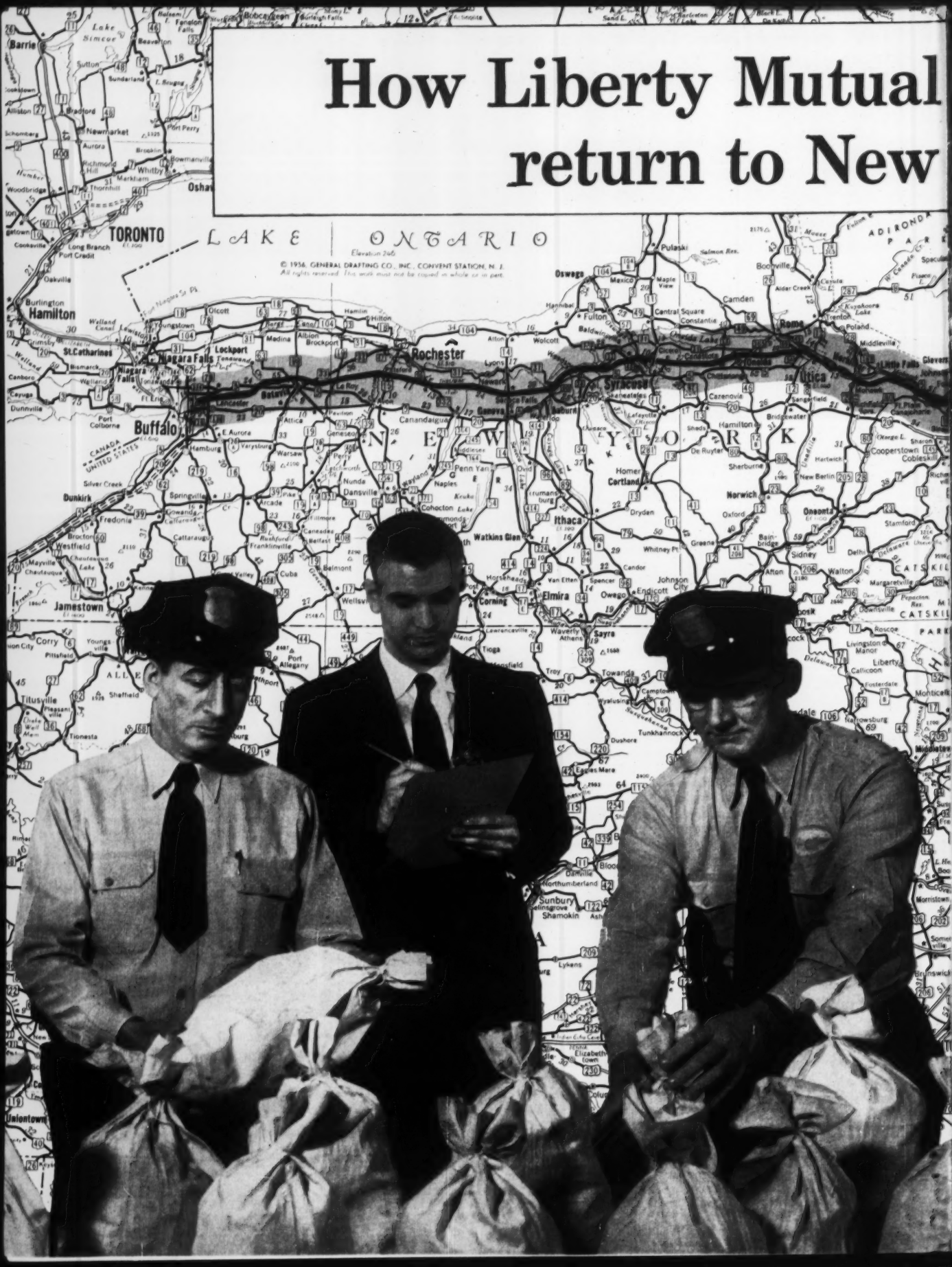
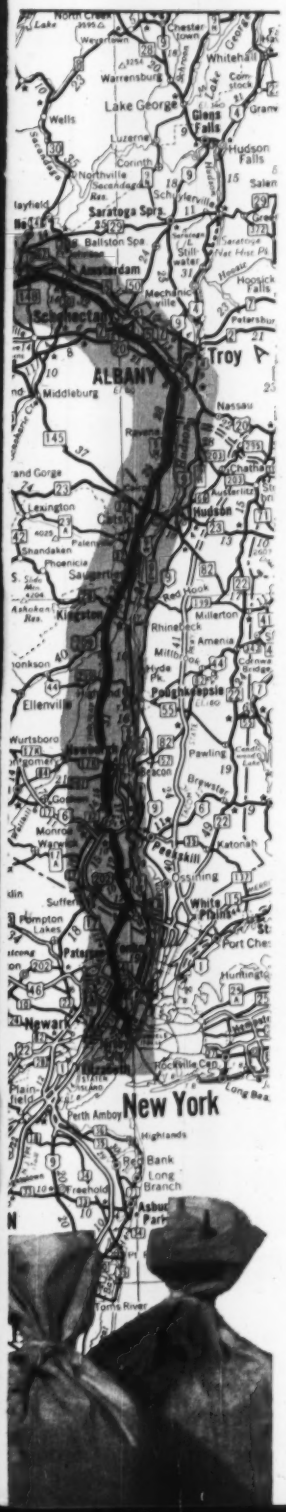


gave a $1,000,000 premium York Thruway contractors



When the world's biggest toll road sliced through New York — 64% of the mileage was insured by Liberty Mutual. Every contractor on that 200 mile stretch worked with Liberty to put safety first. The result: more than a million dollars in premiums returned to them.

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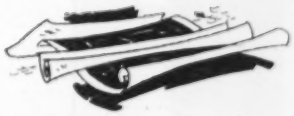
Service like this — on every kind of construction job — has helped make Liberty Mutual America's largest carrier of Workmen's Compensation Insurance. Best's Reports give Liberty highest rating for financial strength. Liberty Mutual is *the company that stands by you.*

10 WAYS LIBERTY MUTUAL CUTS INSURANCE COSTS ON CONSTRUCTION JOBS



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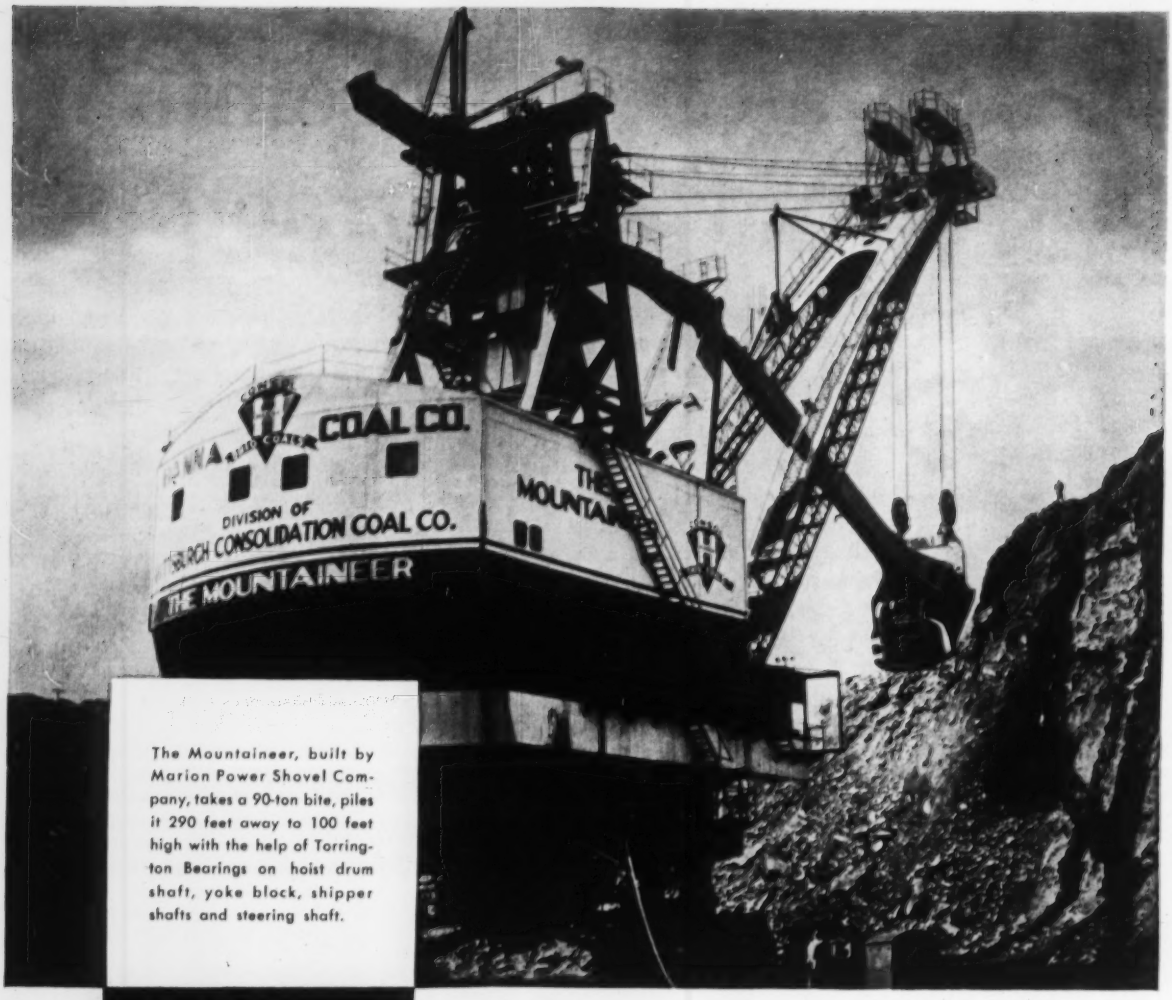
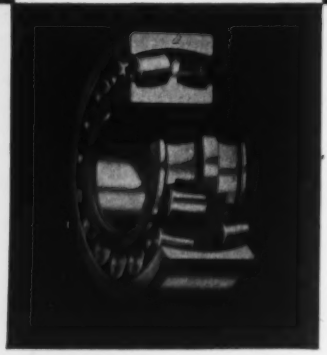


The Mountaineer, built by Marion Power Shovel Company, takes a 90-ton bite, piles it 290 feet away to 100 feet high with the help of Torrington Bearings on hoist drum shaft, yoke block, shipper shafts and steering shaft.



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The Mountaineer, world's largest power shovel, transmits its mighty lifting power—250 tons—through two Torrington Spherical Roller Bearings on the hoist drum shaft.

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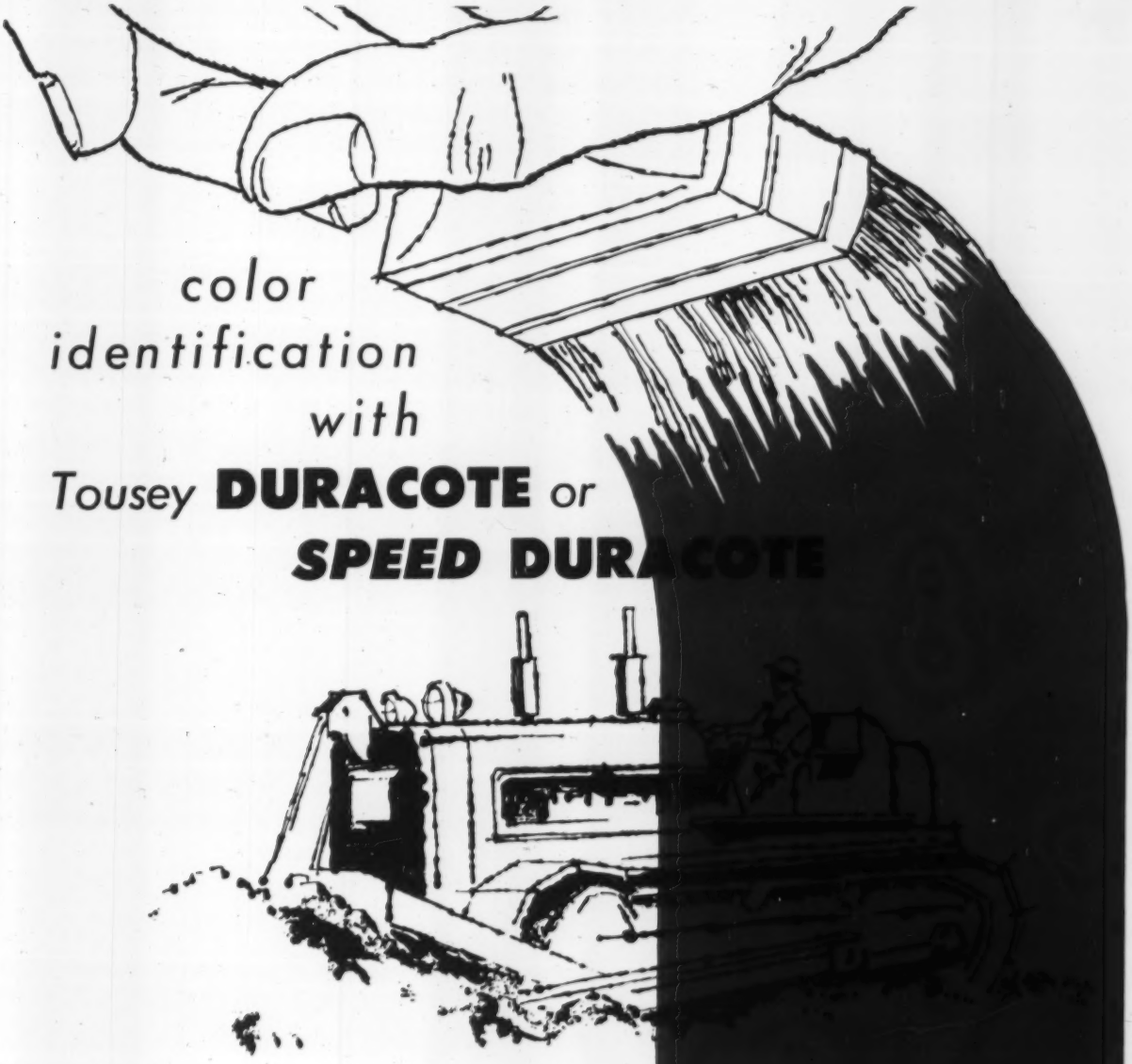

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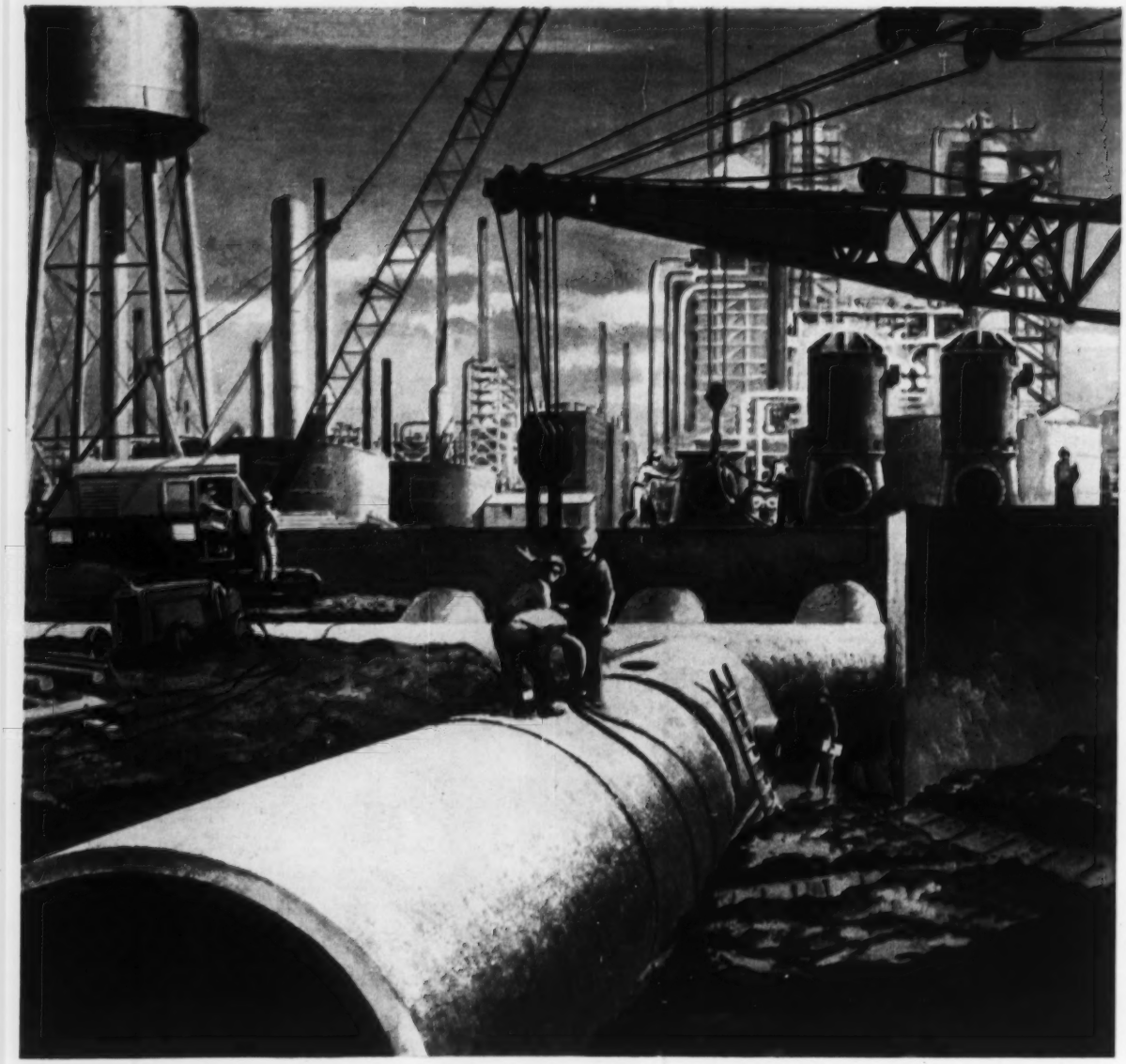

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

ASCE TO CONDUCT POOL—The Task Committee on Engineering Education of the American Society of Civil Engineers is hoping to go ahead this spring on a pool of Society members as the first step in its pilot survey of the civil engineering profession (ENR Oct. 25, 1956, p. 21). Questionnaires are now in preparation and Opinion Research Corp. of Princeton, N. J., is to do the job. Plans call for the personal interviewing of 400 members of the ASCE, to be chosen as a representative cross-section. Separate questionnaires would be used for deans and civil engineering department heads at a sampling of some 25 colleges.

SURPRISE STATISTIC—Public recognition of engineers and engineering generally is considered to be not too well developed in the U.S. But here's an interesting measure of how highly the Canadian public regards the profession: The Canadian Institute of Public Opinion asked a representative sampling of male adults, "If you had the choice of being famous in one of these careers, which one would you choose?" There were a baker's dozen of fields to choose from, and 28% chose engineering—13% medicine, 10% law.

FEDERAL SUPREMACY—With two dissents, the United States Supreme Court ruled this week that state labor boards and courts cannot act in labor disputes affecting interstate commerce, even though the National Labor Relations Board has refused to assert its jurisdiction. Speaking for the court in a case involving the San Diego, Calif., Building Trades Council, Chief Justice Earl Warren said states can act on disputes within the NLRB's jurisdiction only where the NLRB has entered into an agreement to that effect. And the NLRB says such agreements can be made only where the state law conforms with the federal law.

PENNSYLVANIA'S POLITICAL FOOTBALL—Following up threats to do just that, a bill to investigate the Pennsylvania State Highways Department was introduced in the state legislature March 18. Meanwhile, Highways Secretary Joseph J. Lawler declared criticism of the roadbuilding agency has been "based solely on rumor." The Republican-dominated appropriations committee of the lower house immediately approved the measure and its passage by GOP majorities in both branches of the assembly is anticipated.

PRICE TOO HIGH—The Los Angeles Memorial Coliseum Commission is looking for a new architect for an $8 million sports arena to be built adjacent to the Coliseum proper. Charging that the original architects failed to keep the price within the agreed limit and thereby breached the contract, the commission voted to reject all bids submitted on the old plans and to sever relations with the architects.

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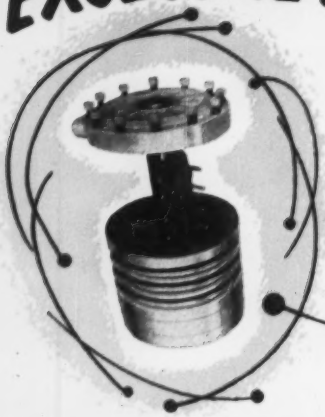
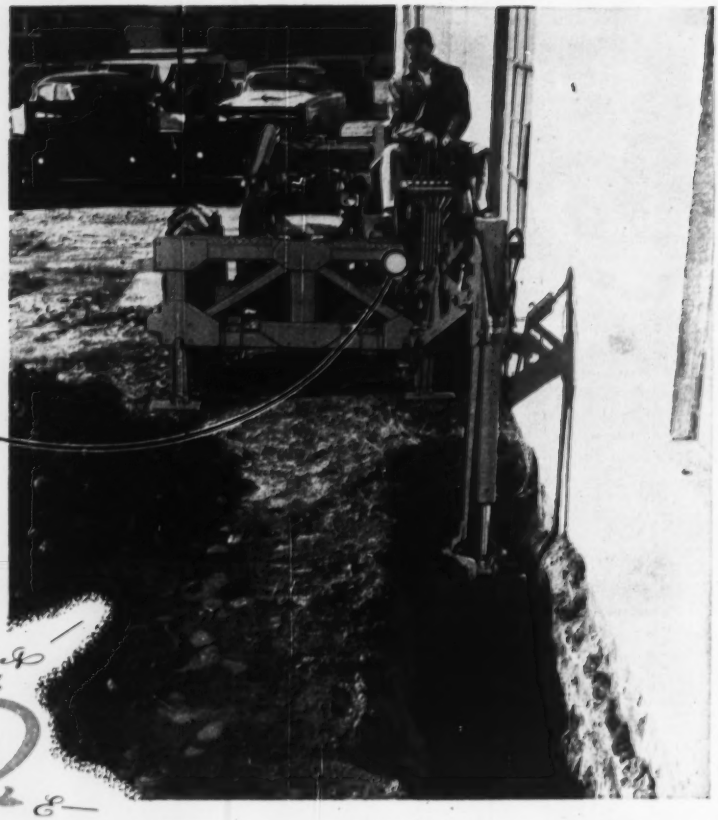


NEW HYDRAULIC ROTARY BOOM SWING CYLINDER



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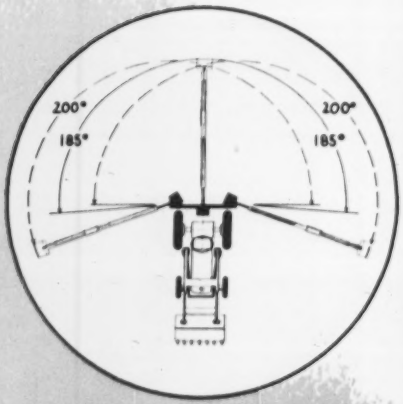

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WASHINGTON OBSERVER

First report on tax flow into highway trust fund is encouraging. It shows that actual tax take on the half dozen items supporting the construction program is running just a little ahead of Treasury estimates.

Some $988 million has been deposited in the fund as of Feb. 28 of which $666 million has been doled out to the states—leaving a balance of some $322 million. This is about what the experts figure it would be after eight months of operation.

An excess of tax revenue over estimates shows for the first three months of the law—the quarter ending September 30 last fall—actual income was $465 million, compared to estimates of $462 million.

•

Trouble is threatened at the headquarters of the operating engineers. Top officers of the international are feuding over secrecy on financial operations and spending. Four vice-presidents on the 12 man executive board are insisting on a show-down.

They want a breakdown on all expenses—figures showing where the money goes. Under present policy, most of the financial goings-on are not disclosed to top officers of the union; presumably, only President William E. Maloney knows the full story.

The flare-up comes at a time when a New York local faces quizzing by the Senate's anti-racketeering committee investigating charges of collusion with management. Now the committee is planning to look into the headquarters situation, too.

•

The $50 million fund for sewage works construction will be used up by June 30, Public Health Service officials now agree. Requests for grants have totaled almost $80 million from some 831 projects with an estimated total cost of $430 million.

PHS has made initial grants of $17.5 million to some 210 applicants in 38 states. Total cost of these projects: about $75 million. The steady rise in grant approvals—now about $3 million a week—will allocate all of this year's kitty, and give the agency a headstart on next year's fund. The budget request for FY 1958 is for $50 million, and the expectation is that this will be approved by Congress in full.

•

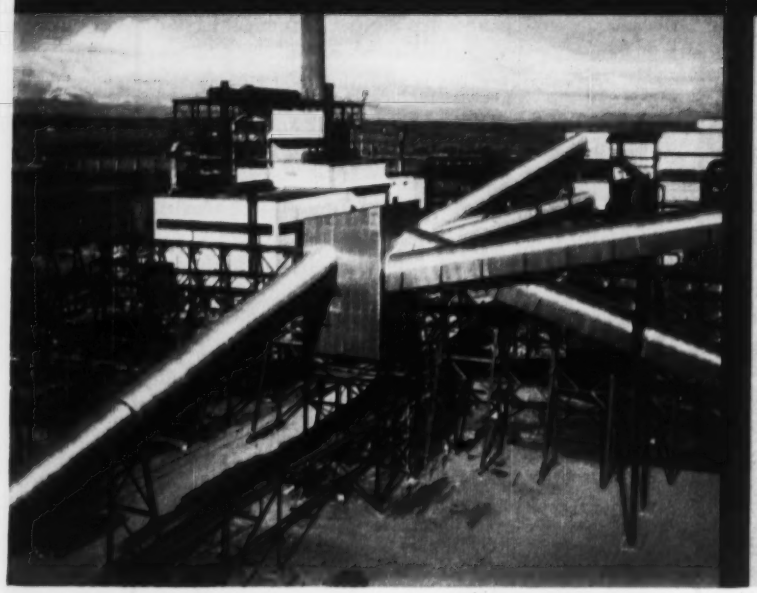
The big $1.5 billion public works bill is in for another fight. The economy drive in Congress makes the legislation—which only approves but doesn't earmark any money—fair game for paring or delay. President Eisenhower vetoed a similar measure last year, complaining that too many projects of doubtful feasibility were included. The measure won't come up for consideration for a month or so; and it easily could be deferred until next year. With Election Day closer, chances for approval will improve.

•

Increasing GI interest rates to 5% is the insistent demand of most of the nation's homebuilders. That is the almost universal comment from a survey which the National Association of Home Builders announced last week as hearings before the Senate Banking Committee on housing got under way. The builders reported that mortgage money is still tight, except in a few areas. The areas showing improvement are generally the same as reported a better outlook in the NAHB seminar earlier this year.

The Administration favors increasing the present 4½% to 5%. But there is still major opposition in Congress; the House Veterans Committee is opposed.

Conveyor Belts...



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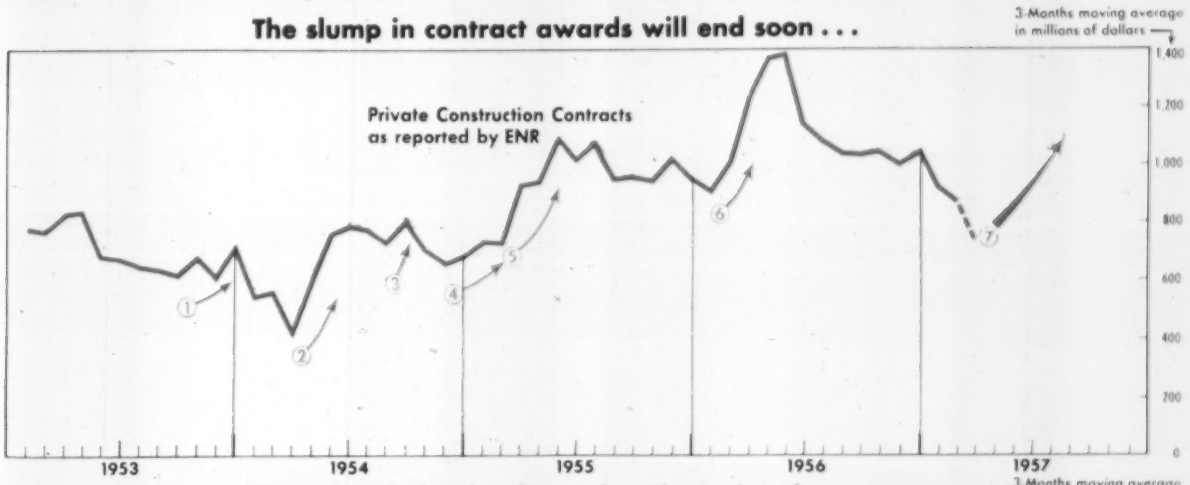
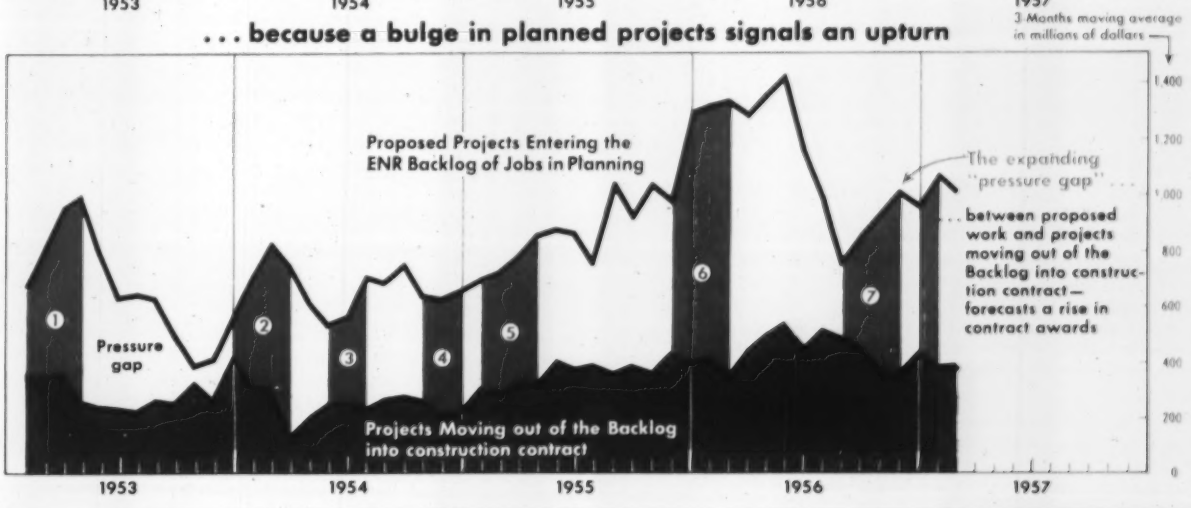
What You Can Expect in Private Heavy Construction

The slump in contract awards will end soon . . .



. . . because a bulge in planned projects signals an upturn



Private Awards Will Pick Up Shortly

The slump in private construction contracts is going to end soon.

The new surge will not match the magnitude of the boom witnessed in 1955-56, but contracts in the months ahead will be substantially higher than they were in the first quarter of 1957.

Awards for private work have been 43% behind the superboom pace of a year ago; private awards in the first quarter were the lowest since the first quarter of 1955.

But, an upturn in private construction contracts is expected to show up in the next month or two. There are two major reasons for this:

• New projects have been entering the planning stage in sharply increased volume while the volume of construction contracts has been dropping. This means that the reservoir of future contracts is rising. When plans are completed and financing arranged, projects now accumulating in the ENR backlog of proposed work will move out of the planning stage and will swell the total of contract awards.

• The tight money market is putting less pressure on the construction market. Money isn't going begging for borrowers and while borrowing costs are down a bit, they still are close to their 30 year highs. But, construction borrowers now find that competition is not as keen as it was last year.

Because they have been generally willing to pay higher interest rates, borrowers have obtained record amounts of new money for construction.

In the industrial building field, ENR capital figures show that corporate security sales for construction, including stock issues, have brought in $1.5 billion in the first 12 weeks of the year.

State and municipal bond sales for construction other than public housing have risen 12% above a year ago to a new high of nearly $1.3 billion.

Mass housing still faces a tight mortgage market. This is particularly true for mortgages guaranteed by the Veterans Administration. The volume of mortgage purchases by mutual savings banks is down but savings and loan associations are expected to supply almost as much new capital for housing in 1957 as they did last year, and insurance companies have maintained a high level of investment in mortgages.

(Continued on next page)

. . . Private awards will pick up shortly

Taking the three major components of the private construction market (commercial building, industrial building and mass housing), here's what's been happening and what is expected to happen in the next few months.

• **Commercial picks up**—Commercial building already has turned upward after a poor start. January contracts tumbled 72% below the year ago volume, but late in February and through March, commercial awards rebounded smartly.

By the end of February, the 1956-57 gap closed to a 49% decline; at the end of March 1957 awards are only 25% below the all time record set a year ago.

The $408 million in commercial contract awards to date is the second highest on record for the first quarter. Most of the credit for the recent upsurge goes to office buildings and shopping centers.

Commercial building should narrow the gap between 1956 and 1957 volume. The reason is that new projects have been proposed in a steadily increasing volume since September 1956; this uptrend has accelerated in the first two months of 1957. In fact, proposed commercial building during January and February of this year topped the same two months of 1956 by 18%.

During the coming months, commercial building contract awards should remain close to their current high level. Mortgage financing probably will be less of a roadblock than a year ago. Moreover, the gains in retail sales (up 6% this year over January-February 1956) strengthen the incentive for new store and shopping center construction.

Total commercial building contract awards are expected to reach a 1957 total of $1.9 billion, as forecast earlier (ENR Feb. 21, p. 54) This would be 7% under last year's record.

• **Housing may improve**—Of the three major types of private construction, mass housing has suffered the most from the slump in awards. During the first quarter, contracts dropped to less than half the 1956 volume.

But, some sunshine may be breaking through housing's dark clouds. March brought the first month to month rise in five months. Although the increase over February was modest, the upturn easily could be a portent of things to come. That's because the volume of proposed mass housing projects has perked up in the past two months.

Assuming an increased flow of mortgage funds, there's a good chance that mass housing contract volume during the next nine months will rise about 50% above the low first quarter rate.

Availability of mortgage money represents the big unknown. It is certain, however, that funds for mortgages guaranteed by the Veterans Administration will be increasingly difficult to find. Banks which were once heavily involved in the VA mortgage field have retrenched.

An example of this is the Dime Savings Bank of Brooklyn, N.Y. Dime Savings, a major purchaser of VA housing loans in the New York suburban market, announced earlier this year that it would cancel some $75 million in commitments unless the VA rate was boosted to 5%. Such an increase seems unlikely in the present Congress.

Mutual savings banks have been purchasing a smaller volume of housing loans this year, partly because their deposits have not risen as fast as last year and partly because they are turning their attention more to the attractive yields on corporate bonds.

Net gain in regular savings deposits for the mutual savings banks (excluding club and special purpose accounts) was 40% less than a year ago. Their mortgage loans showed a corresponding 40% drop.

Savings and loan associations are expected to supply $5.2 billion in new capital for housing mortgages this year, slightly less than last year's $5.3 billion (ENR March 21, p. 167).

Insurance companies, the remaining institutional factor in mortgage purchasing, continue to buy mortgages as a steady clip, averaging better than $500 million a month. January 1957 purchases totaled $512 million, according to the Institute of Life Insurance, as against a monthly average of $515 million during 1956, and $509 million per month during 1955.

Although the insurance companies have maintained a high level of mortgage purchases in overall volume, they have been buying conventional mortgages much more heavily, turning away from government insured loans. In January of this year, 62% of the dollar value of mortgages purchased by insurance companies represented conventional loans.

While insurance companies have maintained almost a constant ratio of housing loans to their total portfolio, they have increased their purchases of corporate bonds, excluding public utilities, since the third quarter of 1955. The current rate of such investment is about $1 billion per quarter.

As long as business continues to seek outside funds in the enormous quantities now being obtained through security issues, insurance companies can be expected to invest in corporate issues at the present level—or higher. This, of course, would defer an increase in mortgage purchases until industry's demand for new capital tapers off.

A slowdown in the capital expenditures rise and a drop in industrial building contracts indicate that industry's needs for outside funds could drop by the second half of this year. This probably would bring more mortgage buying by the insurance companies—helping housing.

• **Industrial building lags**—The sizzling pace of industrial building in the spring of 1956 has cooled off this year. Contracts awarded in the first three months of 1957 trail last year's record volume by 37%. This amounts to a total dollar gap of about $500 million.

During the next two months, this gap will get wider because the comparable 1956 period rolled up a tremendous volume of awards. But the 1957 industrial building awards trend should level off quickly and then turn upward in the coming months.

Industrial awards have declined moderately after leveling off in the third quarter of 1956. But this downtrend should not go further. A wave of proposed industrial plants late in 1956 and in January 1957 promises to bolster contracts in the months ahead.

While there won't be any sensational

Here's the Outlook for Private Construction

▶ **Commercial building,** after a poor January, bounced back in February and March. This upturn will continue, but the year's total still will fall about 7% short of record 1956.

▶ **Mass housing** may be up as much as 50% over the exceptionally low volume of the first quarter. The big intangible in the housing outlook is mortgage credit. For the year as a whole, dollar value of mass housing awards will dip below 1956.

▶ **Industrial building** has skidded 37% below the superboom period in 1956. By midyear, a turnaround is expected. The climb won't be sensational but it will be steady. Awards probably will total about $4.8 billion for the year, making 1957 the second best on record for industrial building.

rise in awards, the improvement should be sustained. And, the upturn in industrial building late in the second quarter should help to pull the 1957 total volume close to ENR's forecast of $4.8 billion, second highest year on record (ENR Feb. 21, p. 54).

Some industries that are traditionally big buyers of construction are expecting to increase their capital expenditures substantially. That's indicated both by the McGraw-Hill survey of last December and the Securities Exchange Commission-Department of Commerce study released earlier this month.

Such industries as iron and steel, nonferrous metals, chemicals and petroleum and coal products plan to boost their spending from 24% to 99% over last year. And, public utilities plan to raise their 1957 expenditures by 24%.

Some of these plans already have been translated into contract awards. The process industry, including chemicals and primary nonferrous metals, awarded $300 million in contracts during the first two months of this year, a jump of 143% over the 1956 period.

However, at the end of February, other major industries' contracts for new plants were trailing 1956. Public utilities, for example, have awarded $257 million in contracts in 1957—but this is 16% under the 1956 period.

Thus far in 1957, the process industry and public utilities (electricity and gas) account for 80% of the total industrial contracts reported by ENR. That compares with 68% a year ago.

Other industries show sharp percentage declines from award activity of a year ago. The dollar value of contracts for machinery and parts manufacturing plants is down 14%, for example, while the decline in food processing plants is continuing this year with the value of awards off 48% during the first two months.

• **Prices and savings**—The future of private construction at this time seems to depend on accumulation of savings and price trends. These affect government monetary policy, which, in turn, strongly affects private construction.

The rate of personal savings out of income has risen markedly in the past two years, from an annual rate of $13.9 billion in the first quarter of 1955 to $22 billion in the last quarter of 1956, according to Department of Commerce figures. This is encouraging. Actual personal savings in 1956 rose $4.3 billion over 1955, to $20.9 billion.

This contrasted with the two year downtrend in personal savings from $19.7 billion in 1953 down to $16.6 billion in 1955.

The price situation is mixed. Contract declines for housing, commercial and industrial buildings have softened prices of some building materials.

A lessening in demand has brought with it price drops for lumber, plywood, window glass, insulating materials, some asphalt roofing products and plumbing equipment.

Wage rates and steel and cement prices will go up, but the price declines for some of the other building materials will help to keep construction costs from shooting up. In fact, ENR expects the cost rise in 1957 to be substantially less than in 1956.

The climate today is such that an upturn in private building would not bring with it any inflationary across the board price increases.

The reason is simple. While the volume of awards for housing, commercial building and industrial building will increase in the months ahead, this rise is not going to match the superboom pace of early 1956. All three types of construction will fall short of the 1956 totals.

For industrial and commercial building, this will be the second best record on record for dollar value of contract awards; for housing, 1957 will be the third best year, topped only by 1955 and 1956.

Cable Breaks, Stops Fail; Hoist Fall Kills Seven Men

The snapping of a cable supporting a construction elevator on the Duval County (Fla.) courthouse project brought death to seven and injury to 12 workers when the cab dropped 65 ft to the ground. The reason for the cable snapping or the failure of safety devices to operate has not yet been determined.

The elevator was one of two identical hoists hung from a 130 ft tower. The tower was installed new last June and was claimed to be well under its working load at the time of the accident. The second hoist and cable show no signs of breaking.

The ¾ in. wire rope that broke had been double-rigged and had a load capacity of about 45 tons. Safety checks on the elevator failed to work. Scrape marks on the guides indicated that the rails were scraped by the safety locks as the elevator dropped.

Laboratory tests on the equipment will be made by J. P. Vidosic, professor of mechanical engineering at Georgia Tech and an expert on elevators. His report on the findings will not be completed for two or three weeks.

According to State Industrial Commission Chairman James Vocelle, the accident followed by a few months a warning by the commission to S. L. Hodge, general superintendent for Geo. D. Auchter Co., the general contractor, that no person except maintenance personnel could ride in any construction hoist.

A Minor Quake

San Francisco frightened but suffered little damage

Even though the March 22 earthquake at San Francisco was the strongest the city has experienced since the 1906 disaster—and strong enough to be frightening—it must be classified as minor in terms of damage caused and as of only medium intensity.

Seismologists set the magnitude of its main shock at 5.5 on the Richter Scale compared to 8.25 for the 1906 San Francisco quake. Other recent damaging tremblors were Long Beach (1933) 6.25; Seattle (1949) 7.0; Tehachapi-Bakersfield (1952) 7.7; and Eureka (1954) 6.6.

The scale is graduated from 1 to 10, and intensity 5 is the lowest of the damaging grades, representing such effects as occasional plaster cracking and falling chimneys. However, since the effect of shocks varies in a geometric ratio, a quake of slightly greater intensity would undoubtedly have caused San Francisco considerable damage.

The earthquake centered on the coast just southwest of the city, and is attributed to movements along the famous San Andreas Fault. Since these movements resulted in a series of low intensity shocks, some earthquake experts view the quake as beneficial in relieving the underground strain, which might have built up into a shock of major intensity.

Outside of broken windows, (such as those in the Stonestown Apartment House pictured above) cracked plaster and tumbled grocery stocks, other damage reported consisted of a leak in a 1.6 million gallon concrete water reservoir, which engineers believe may have been caused by displacement of the water stop in the joint between bottom and sidewalks, and some major slides on State Highway 1, a cliff-side route just south of the city.

Road Progress Faltering at State Level

- **Eleven states have difficulty raising money**
- **Legislatures slow to impose taxes**
- **But money aside, some progress is being made**

The U. S. highway program appeared to be faltering a bit, from the legislative viewpoint, as state legislatures began to pack up their portfolios and return home. Inability or unwillingness of the state lawgivers to find added revenue sources to fuel the highway program was the major stumbling block.

Despite these apparent setbacks, however, progress was being reported on other fronts—including that of solving the shortage of engineers and other administrative problems.

And a hot fight was developing—as expected—in Washington, as the Congress debated legislation to regulate roadside advertising.

The money side of the question, at state level, seemed to be centered around the unwillingness—for political reasons—to raise taxes on motorists.

• **No more money?**—The roster of states that were having money troubles was growing longer.

Montana was included, where State Highway Engineer Scott P. Hart said that the legislature's "inability" to provide enough matching money to meet federal funds would cut the state's highway program by about 15%. The state's lower house had chopped 1 cent off the 7-cent-per-gallon gasoline tax, and the upper house refused to approve a proposed weight-distance truck tax.

The West Virginia legislature turned down a proposal that would have permitted the state to impose tolls on hitherto free bridges, as a means of raising revenues to finance new construction.

New York's legislature, dividing strictly on party lines, flatly rejected Gov. Harriman's proposal for a 1 cent gas tax rise.

Pennsylvania legislators received with no apparent enthusiasm a proposal by Gov. George Leader to continue the present 6-cent-per-gallon tax. The lower house has already passed a bill cutting the levy back to 5 cents a gallon. And leaders of the Republican-controlled legislature pointed out that since the state now has $100 million in its motor vehicle fund, the administration had best be prepared to prove the need for the extra money to be provided by continuing the higher rate.

Arkansas' General Assembly ended its regular session without appropriating any operating funds for the State Highway Department, after a bitter dispute over application of minimum wage provisions to a group of department employees who work part-time on hourly rates. A special session must be called, since the department will have no funds after July 1.

Kentucky too, found its highway program blocked by court, rather than legislative matters. Voters last year approved a $100 million road bond issue to match Federal funds—but the issue has been challenged in the courts and certainly will go to the Court of Appeals before the state can proceed.

New Mexico's biennial legislature closed its books with a record of rejecting almost all of Republican Governor Edwin L. Mechem's programs—including rejection of two appointees to the five-man State Highway Commission, and proposed revision downward of the state's maximum truck weight regulations (which now put New Mexico among the highest in the nation).

• **Progress, too**—But there was progress in other states, and on other fronts.

Indiana's legislature, after a record clock-stopping overtime period, managed to push through a 2 cent-per-gallon increase in gasoline taxes.

Tennessee's Governor Frank Clement signed into law a bill to provide for payment of removal costs of utility lines from highway rights-of-way under the federal road program, while requiring utilities to pay such costs on their primary and secondary roads.

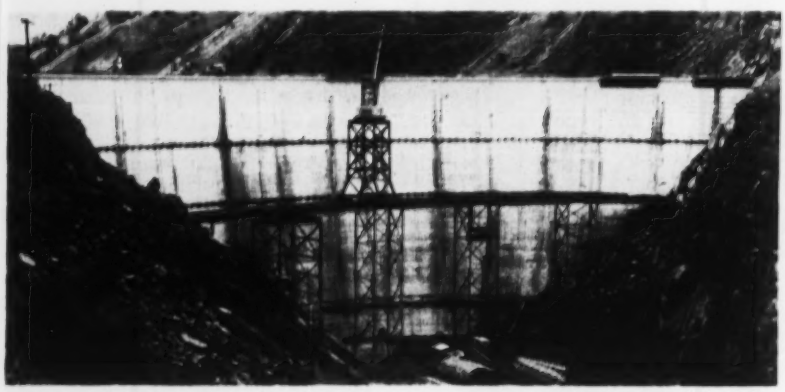
In **North Carolina,** two highway bills were given good chances of passage. One would separate the State Prisons Department from the Highway Commission, removing some of the prison costs from the roads section; the other would authorize the Highway Commission to pay highway right-of-way costs for towns with populations of 5,000 or less, instead of the towns paying one-third of the costs of roads within their corporate limits.

In **Delaware**, the Highway Department formally asked for measures to authorize a complete hydrological survey of rainfall and runoff, a drainage control law, and power to condemn land for drainage purposes.

Washington's legislature authorized expenditures of $300 million on highways for the next biennium, and approved a $75 million bond issue for the Tacoma-Seattle-Everett Freeway, the bonds to be retired out of state motor vehicle funds.

• **Administrative side**—On the side of administrative actions, a number of important legislative and court decisions were recorded during the week.

Possibly most important—at least from the local view—was in **Delaware,** where the State Supreme Court added considerable strength to the powers of the State Highway Department, in a decision upholding the commission's



California's Newest Dam Starts Storage

Monticello Dam, key unit of the $51 million Solano Project in northern California, has been placed in operation by the U. S. Bureau of Reclamation.

The concrete thin arch dam is 304 ft high and will have a storage of 1.6 million acre-ft of water, to be used for irrigation, municipal and industrial use in Solano County. The $7.6 million contract for Monticello was held by Peter Kiewit Sons Co., San Francisco, and Parish Brothers, Benicia, Calif.

right to conduct condemnation proceedings against property owners to obtain right-of-way. A legal challenge had contended that condemnation action was improper unless the proceedings were approved by the whole commission, rather than by the chief engineer.

North Carolina finally enacted—and Gov. Hodges signed—a bill reorganizing the top administrative framework of the Highway Department, providing for a seven-member commission, instead of the present 15 man group, and for the appointment of a Director of Highways, as top administrative officer.

In **California**, the Division of Highways said it had started a complete inventory of the state's present and future highway needs—including those of cities and counties—as a guide to future planning.

Wyoming's Highway Bureau annouced a number of shifts in its personnel, aimed at better administration of the construction program; **North Carolina** began in-service training for its highway personnel; **Kentucky** announced a merit system for its Highway Department personnel, to insure better rewards and job security.

• **Consultants hit, defended**—In **Tennessee**, a state senator attacked the hiring of out-of-state consulting engineers on the ground that the state could do the work at half the cost. Sen. Brooks McLemore released figures that showed the state has already contracted to pay $4.4 million in fees to consulting firms for plans for just six portions of the interstate highway system—the cost representing about 3½ to 4½% of the construction cost. McLemore argued that the state itself had designed roads last year at a cost of about 1%.

And the National Society of Professional Engineers, in its "Engineering Employment Practices" newsletter, attacked what it said was the Bureau of Public Roads' insistence that states include in their contracts with consultants a proviso that former employees of the BPR, or state city or county engineering departments (except retired men) will not be employed by the consultants, without written consent of the former public employer.

This, contended NSPE, would bar a consulting firm from employing engineers who were with a public highway organization at the time the contract was executed, even though the prospective employee had voluntarily left public employ and approached the consultant on his own for employment.

• **Billboards?**—In **Washington, D. C.**, an expected battle over control of roadside advertising was shaping up.

Spokesmen for outdoor advertising organizations, hotels and motels, urged a Senate committee to reject measures now before them to establish regulation of billboards along the 41,000 mile interstate system.

The spokesmen testified that outdoor advertising was "essential to the preservation of many businesses," and contended that the federal government shouldn't get into the field of billboard regulation, but should leave that matter to the states.

U. S. Part of Seaway Work Is at 30% Completion Mark

The U. S. portion of the St. Lawrence Seaway is 30% complete, St. Lawrence Seaway Development Corp. officials announced last week. The overall completion figure is based on contractor's earnings and government costs through February.

And preparing to add more mileage to the 27 ft deep waterway, two U. S. dredging companies, under direction of the Corps of Engineers, are about to start carving 600,000 tons of rock and clay from the 8 mi Amherstburg Channel in the Detroit River.

The channel is to be increased from its present 21 ft depth to meet the St. Lawrence Seaway required figure. Work is scheduled to start in mid-April and is estimated at $22 million. Much of the excavated material will be used to form dikes on both sides of the channel.

The two dredging companies are Marine Operator of Minneapolis and The Great Lakes Dredge & Dock Co. of Cleveland, Ohio.

Honolulu Held Not Liable In Koolau Tunnel Deaths

The Hawaii Territorial Supreme Court has cleared the City-County of Honolulu of liability in $2 million worth of damage suits resulting from deaths and injuries incurred during the construction of the Koolau Mountain Traffic Tunnel.

When five men were killed and two were injured on Aug 14, 1954 by a cave-in (ENR, Aug 19, p. 28) of the still incomplete tunnel, relatives first sued the contractor, E. E. Black, Ltd. These cases were dismissed when the court ruled that, under territorial law, the contractor's liability was satisfied in full by the payment of workmen's compensation benefits.

A circuit court then admitted suits against the City-County of Honolulu which had contracted with the Black firm to do the construction.

The Territorial Supreme Court, however, in a unanimous verdict of its three members, reversed the lower court and ordered a test case dismissed. It held that the city was actually the employer, and was thus protected by the same liability limits of the Workmen's Compensation Act.

Wide World Photo

Plastic "Raincoats" Protect Against Slides

Hillside householders in Portland, Ore., have spread plastic sheeting over rainsoaked soil to prevent further wetting and earth slides that could be disastrous.

A small amount of soil and rock already has slid into the street this month in the wet weather that threatens these houses in every wet year at about this time.

This winter there have been several heavy rains—some over an inch in 24 hours—and the plastic raincoats are the property owners' best hope against super-saturation of the ground beneath their houses.

Death Knell for Tollroads?

Move by Governor Leader to free Pennsylvania Turnpike may foreshadow end of toll highways.

A local political battle—with national implications because it embodies a direct and definite attack by a state against both the concept of tollroads and the commission or authority type of administration of public facilities—moved into the fighting stages in Pennsylvania last week.

The attack was in the form of legislation, introduced in the General Assembly at the request of Governor George Leader, which will in effect strip the already weakened Pennsylvania Turnpike Authority of its remaining powers, and turn the pike over to a "board of conservators" whose function it will be to liquidate the enterprise and make the pike a free road.

Since inception of Leader's attack on the Turnpike Authority Commission, several months ago, his opponents have claimed that the administration has been motivated solely by political considerations (ENR Sept. 13, p. 25). The administration repeatedly has denied this and Gov. Leader himself has, up to this time flatly stated that his actions have been spurred by a desire to eliminate a system which he claims has spawned "the greatest public swindle of all time." (Twenty-three persons, including several former officials of the turnpike system, engineers, contractors and employees are currently under Dauphin County Grand Jury indictment, and the jury is still investigating the case.)

However, regardless of the outcome of Pennsylvania's intrastate fights, the introduction of legislation designed to free the road has put the question squarely in the national spotlight. If Gov. Leader can make good his threats to free the road by disposing, in some legal means, with obligations to bondholders, the precedent may well affect not only every existing toll highway in the country, but also future toll facilities since prospective highway bond purchasers will view with suspicion the stability of such investments.

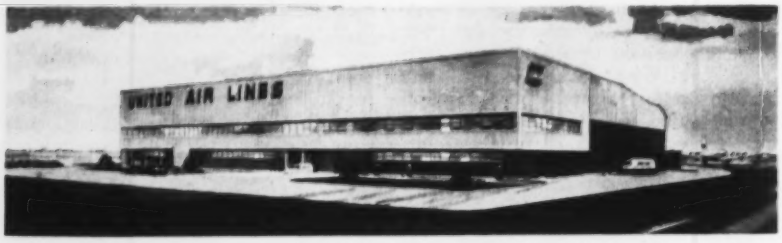
Opposing forces contended that there is no legal way of breaking the covenant between the commission and its bondholders, nor is there any way of bringing the tollroad into the interstate system.

Gov. Leader counters these statements by saying that the road can be freed either by Congressional action or by leasing it to the State Highway Department which would then use state highway funds to pay off its bonded indebtedness.

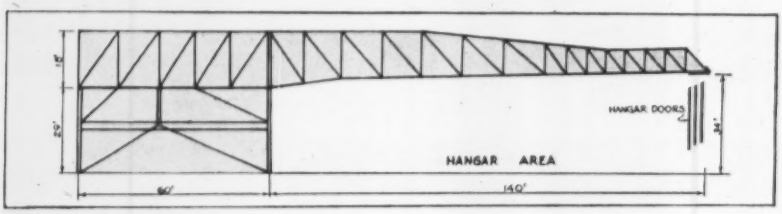
This must be done says Gov. Leader because "the concept of toll highways is made obsolete by the federal program."

As further justification of his stand the governor paraphrased Lincoln by stating:

"We cannot have a system of superhighways that is half toll and half free." "In the years to come," he went on, "the great majority of the nation's expressways will be free, and (tollroads) will be the victims of discrimination." Gov. Leader further highlighted a problem which has been of concern to many turnpike and highway officials throughout the country, when he added that future highway planning will be hampered by the considerations which must be given the economic stability of existing tollroads.



Newark Airport's Next Hangar . . .



. . . Will Have 140 Ft Cantilevered Trusses

Construction of the first hangar to be built at Newark Airport since World War II will get under way shortly. The Port of New York Authority announced last week the award of two contracts totaling nearly $2 million for construction of a new hangar for United Air Lines on an 18.9 acre site at the New Jersey field.

Overall dimensions of the building will be 300 x 200 ft. A two-story shop section 60 ft wide will run the full 300 ft length of the hangar and will support single-cantilevered trusses extending above the remaining 140 ft width of the structure.

Gramercy Construction Corp., of New York City, will build the hangar under a $1.3 million contract. Exterior paving and utilities, including a 150-car parking lot and an aircraft parking apron, will be constructed under a $636,000 contract by Villa Contracting Co., of Westfield, N. J.

United will occupy the hangar on a 20 year lease.

Completion of the new facility is expected by the end of this year.

Insurance Called Too High Even With Payoff Certain

Victims of Hawaii's Mar. 9 seismic wave say the proposed price of Federal Flood Insurance (for which they'd be eligible) is so steep that only a few would buy it.

Frank J. Meistrell, Commissioner of the Federal Flood Indemnity Administration, recently said the rates for the insurance may be between $1 and $12 per $100 of coverage.

After the wave, the Honolulu Star-Bulletin interviewed a number of people who had lost their homes and asked if they'd buy the insurance when offered in the future.

Most answers were negative, though a few persons suggested that rates of $3 or $5 might be considered, others said even this would be out. Fire insurance on a typical frame home of the type most widely damaged by the wave runs only about 12½ to 15 cents per $100 by contrast.

A few of the Hawaii victims have had their homes damaged as much as five times since World War II—three times (1946, 1952 and 1957) by siesmic waves and two other times by flooding or heavy seas.

Money for Engineers

Top jobs get special push in California proposal

Engineering personnel in the California state government are in line to receive a 5% pay increase effective July 1. The percentagewise boost would apply to starting salaries on up through all civil service brackets.

Gov. Goodwin J. Knight has recommended the increase and legislative committees have given initial approval.

Facing tougher sledding, however, is Gov. Knight's proposal for substantial salary raises to top governmental officials.

Gov. Knight has recommended a pay increase to $27,500 a year for Director of Water Resources Harvey O. Banks and Director of Public Works Frank B. Durkee. The positions now pay $18,000 a year.

Some opposition has developed to the executive salary raises. Several legislators privately have complained the suggested salaries are too high, and Lieutenant Governor Harold J. Powers protested publicly. He said consideration should be given to higher pay for those in the lower brackets before raising the salaries of state executives.

However, others agree the directors of the Water and Public Works Departments should have more money, pointing out subordinates receive pay almost equal to their salaries.

It is noted Public Works Director Durkee's salary is only $1,200 a year higher than State Highway Engineer George T. McCoy and only $1,800 a year greater than the salary of State Architect Anson Boyd, both heads of divisions in Durkee's department. Water Director Banks receives only $1,000 a year more than the Assistant Director, M. J. Shelton.

Engineers Fail to Block Candidate for Road Chief

The Supreme Court of the State of Michigan has rejected a petition by the Michigan Society of Professional Engineers disputing the qualifications of a candidate for the post of State Highway Commissioner.

The society contended that John C. Mackie, Democratic nominee for the state's top highway job, lacked legal qualifications for the post because he is not a registered engineer. Although he has a degree in civil engineering from Michigan State University, Mr. Mackie is registered only as a surveyor.

Michigan's law merely requires that the highway commissioner be "a competent highway engineer experienced in the administration of highway affairs".

In denying the society's writ of mandamus to keep Mr. Mackie's name off the ballot, the court made no comment on the merits of the case. However, as matters now stand, Mr. Mackie will oppose Republican George M. Foster, present deputy highway commissioner, in the April 1 election.

Oroville Dam Work

Preparatory jobs being readied for bid call on Feather River Project unit

The California Department of Water Resources has announced that bids will be called after Mar. 29 for the first of two jobs preparatory to construction of Oroville Dam, a key feature of the $1.5 billion Feather River Project (ENR Jan. 17, p. 28).

Bid call will be for relocating portions of the Western Pacific Railroad around the dam and reservoir site. Work includes construction of the two most northerly of five railroad tunnels. The tunnels will be 4,400 ft and 8,800 ft long, each 18 ft wide and 24 ft high, and concrete lined throughout.

Another bid will be made next month for the second of the two jobs—relocation of a 13.2 mi portion of U. S. Highway 40. Major item will be 3¼ million cu yd of roadway excavation. The division of Highways contract will not include construction of the combination railroad and highway bridge across the west branch of the Feather River.

Work on these two contracts will start under a $25.2 million appropriation approved by the California legislature in January (ENR Jan. 31, p. 17).

• **Other plans**—Late in May, bids will be advertised for the remaining three tunnels of the railroad relocation. Tunnels will run 2,825 ft, 2,970 ft and 2,700 ft, and will be of similar cross-section as the first two.

Scheduled for call during the first half of 1957-58 fiscal year will be construction of the state highway between Oroville and Wicks Corner. Construction of the bridge across the Feather River is also included in plans for this year. It will be a double-deck continuous steel truss structure, overall length 1,800 ft, and a center span of 675 ft.

The entire relocation project is estimated at $50 million and expected to take 2½ years to complete.

Work Starts This Fall On Buffalo Skyscraper

Construction is scheduled to begin late this year on a 20 story office building in Buffalo, N. Y. It will be the tallest building erected in the city since 1929.

The structure will rise its full height without setbacks. The base up to a height of two stories will be faced with granite.

At about the 2 story height the exterior will consist of dark blue-green glass spandrels, gray-tinted, glare-reducing windows, and aluminum window frames and mullions.

The building will contain about 165,000 sq ft of rentable area. Tenants will be served by four automatic high-speed elevators.

Ceilings will be hung acoustical type with recessed fluorescent lighting. Plans include a zoned system of air conditioning.

Occupancy is scheduled for spring next year.

Tishman Realty & Construction Co., Inc., of New York, is the owner-builder. The architectural firm of Emery Roth & Sons, also from New York, designed the building.

Shipping Delayed

Navigation on the Missouri set back for six weeks

Opening of the navigation season on the Missouri River will be delayed for at least six weeks because of short water supply.

Not until May 1 will water at the mouth of the river be brought up to navigable depth by stepping up water releases from the upstream dams, according to information from the Missouri River division of the Corps of Engineers.

Three years of drought compounded by the necessity of bringing three new reservoirs—Garrison, Fort Randall and Gavins Point—up to operating level point to a "seriously subnormal" inflow into the upstream reservoirs in 1957.

The decision to delay the opening of the season followed surveys made March 1 which showed vast reaches of the upper Great Plains seriously deficient in snow.

The plan is that during the rest of March and through early April, releases from Gavins Point—lowermost of the Missouri Dams—will be held to the present 7,500 cfs; thereafter, releases will be gradually increased to the summer level of 30,000 cfs.

The delay will affect operations of barge lines which had hoped to make up steel tonnage set back in 1956 by strikes.

Power generation will also be affected. At the summer release rate, power output runs from 300 to 400 million kwh per month. With the winter release rate continued, power production also will continue to be limited to 150 kwh.

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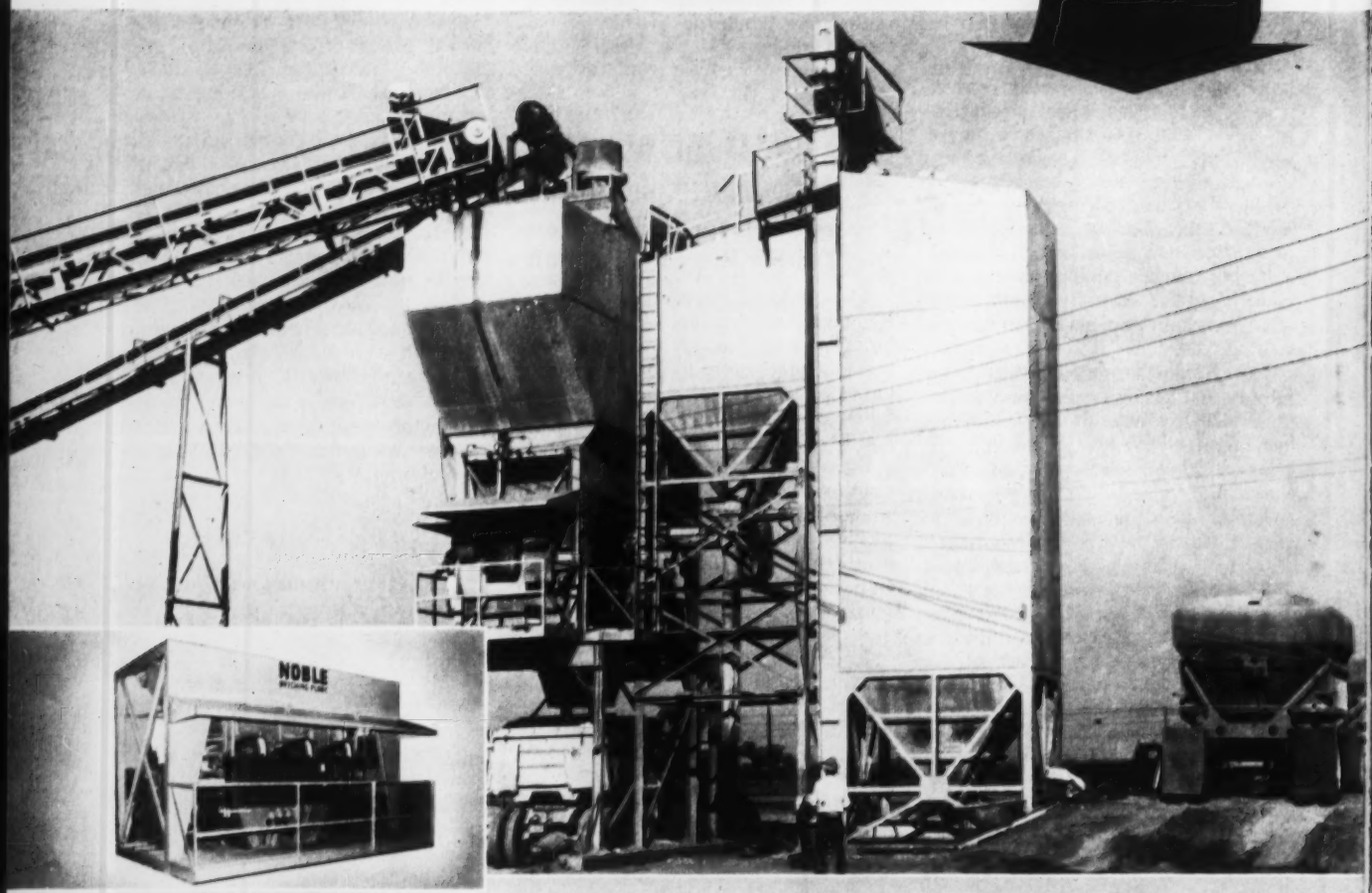
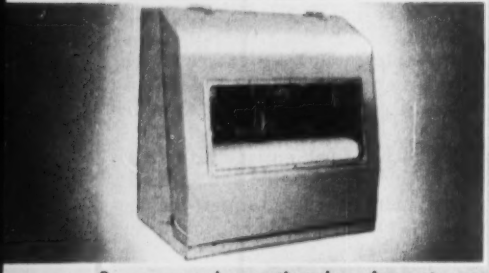


Bin center section can be truck-hauled without removing weigh hoppers, operator controls or any other components. All electrical switches are mounted in this unit and connections are made by simple twist-lock couplings.



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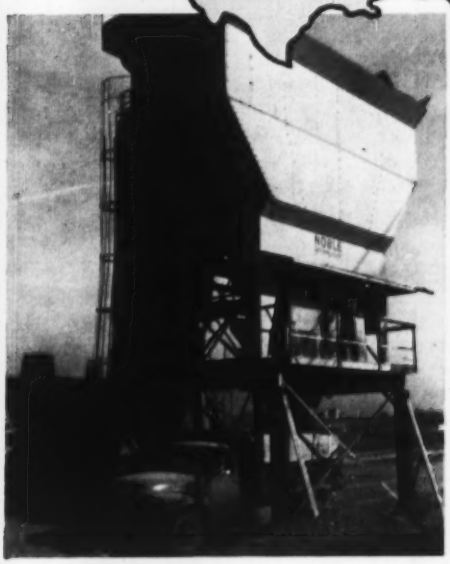
Below—On New England paving job.



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Another Money Source

California agency asks ODM for terminal loan

California's State Harbor Board last week became the first state agency to apply for an Office of Defense Mobilization loan.

The money is to be used for the construction of a $50 million marine terminal at San Francisco, on the ground that it will aid navigational defense.

Port officials hope to get the loan by making unusual use of an ODM regulation that includes a proviso permitting loans for the construction of privately owned installations with defense value.

If the Defense Department certifies the proposed terminal as essential to national defense, ODM, without Congressional authorization, can make a long-term loan. The loan is to be repaid in full at the going rate of interest, from port revenues. Any specific defense features, such as bomb shelter, would be paid for by the U. S. government.

Harbor Board President Cyril Magnin commented that "it would seem inconsistent with the considered policy of the federal government to provide modern and highly efficient merchant ships for essential use in a national emergency, yet not to provide modern terminals to service these vessels, especially under national emergency conditions."

The terminal would be built on a 350 acre site (about 200 acres of tideland) owned by the Harbor Board. It would be a solid-fill, quay-type fireproof terminal capable of berthing 15 vessels of the 563 ft Mariner Class.

Supplementing the extensive berthing capacity—making it the largest such terminal on the Pacific Coast—the proposal envisions shipside cargo sheds and warehouses, bulk loading installations and refrigerated storage.

Included in the overall project would be railroad and truck approaches, docks, facilities and troop embarcation and debarcation terminals.

While no military shipments would be required to support commercial operations, port officials said their plan "presupposes that its construction would incorporate every feasible defense feature, so that the terminal could be converted to military use in time of emergency."

These construction features would include fire and bomb resistant characteristics, plus a large bomb shelter area for use of the adjacent Navy Yard personnel, the terminal personnel, and nearby residents. The proposed concrete and steel shelter could be converted to other uses in peace time, such as stockpiling and storing strategic materials.

Preliminary engineering plans still are being prepared by the Harbor Board staff. It is estimated the project would take 2½ years to build.

Passenger Conveyor Tested On Chicago's South Side

Chicago Transit Authority commuters are getting a "lift" on Chicago's south side by means of a conveyor belt. Known as a Speedwalk Passenger Conveyor, the installation carries passengers from a station at ground level to elevated train platforms 22 ft above. The Speedwalk is parallel to the elevated tracks and is approximately 88 ft long.

The conveyor has a capacity of 7,200 persons per hour, a belt speed of 125 ft per minute and is inclined 15 deg. Controls permit operation in either "up" or "down" direction.

An overhead canopy provides protection from the weather. Ballustrades 3 ft high are at each side of the ramp. The belt is designed to carry 100 lb per sq ft of surface. It is made of four-ply, rubberized, 36 in. wide fabric, of which 33 in. is exposed standing space. It is self cleaning in that litter is automatically cast off at the top or bottom of the belt as it moves along.

The transit authority selected the south side location as a test site for the Speedwalk installation because of sharply increasing traffic during rush hours. If it proves successful, additional installations may be made at other heavy traffic points.

The Speedwalk was built and installed by Stephens-Adamson Mfg. Co., Aurora, Ill.

Planning Ahead

Three cities get results of water, sewage studies

New Orleans, Columbia (S. C.) and Tacoma (Wash.) have joined the growing list of cities looking ahead to meet future sewage and waterworks needs.

New Orleans—To keep pace with growing requirements, the New Orleans Sewerage and Water Department by 1975 will have to make capital expenditures totaling $182.5 million for water, sewerage, drainage and power. The recommendations were made in a report by Black and Veatch, consulting engineers of Kansas City, Mo. Of the total, $71 million worth of construction is necessary by as early as 1960, the report states.

The $182.5 million total roughly breaks down into: waterworks—$65 million, drainage—$85 million, sewerage (not including treatment works)—$18 million, power—$13 million.

Tacoma—A $30 million sewer construction program has been recommended to the City Council by the San Francisco consulting engineering firm of Brown & Caldwell. The firm's report calls for construction to begin this year or next and be completed by 1975. The program would include sanitary sewers to cost $20 million and storm drains at $10 million. In addition, the report calls for increasing capacity of the city's present treatment plant from 13 mgd to 40 mgd by 1965 and 80 mgd by 1975.

Columbia—To meet future consumption demands of the metropolitan area for the next 30 years, waterworks expansion costing $9.3 million must be undertaken. This was the recommendation to the City Council made by B. P. Barber and Associates, engineering consultants of Columbia.

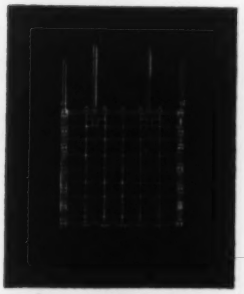
Prefab Dormitory Walls Have Built-In Furniture

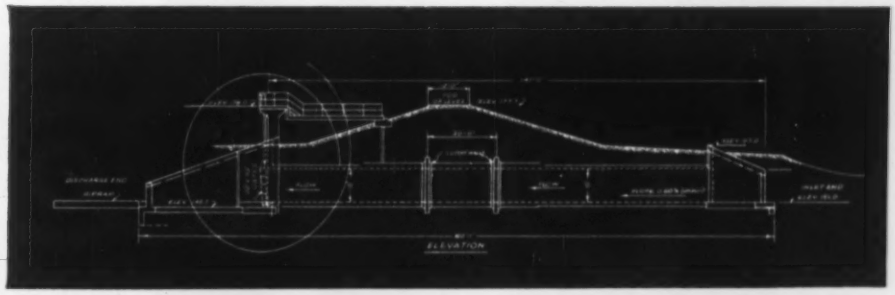
A new dormitory, to accommodate 104 women students at Tulane University in New Orleans, La., will have prefabricated interior walls with built-in room furnishings.

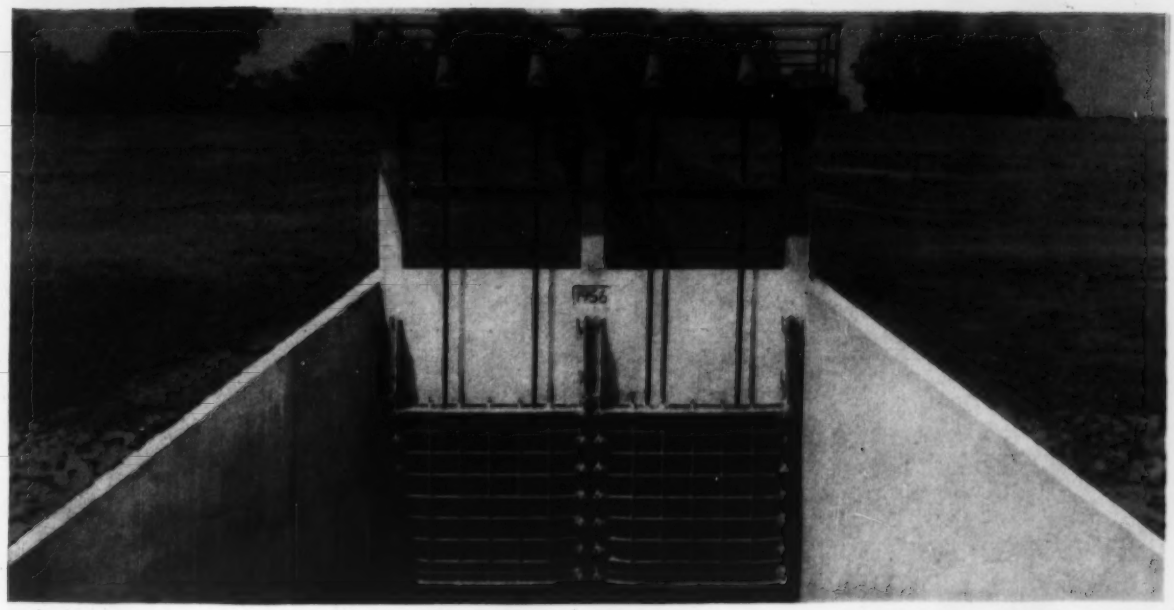
Walls of the prefab built-ins will run the width of the structure. Most of the interior partitions in the three level building will be moved into place after the main shell is completed.

Each wall face will include a desk, shelves, storage cabinets, clothes closet and backrest for a bed-couch. The same wall will have duplicate features for the room next door.

The dormitory will cost $565,000. Occupancy is expected in the fall of 1958. Architects for the structure are Riciuti Associates, New Orleans.







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Water control engineering problems are unique in their profound effect upon human lives, health and prosperity.

In this installation, Rodney Hunt engineering and sluice gate design protect more than 80 square miles of farm land. The gates, when open, allow normal drainage to the Bayou River, and when closed prevent flooding as the river goes to flood stage.

The two Rodney Hunt 10-foot by 10-foot cast iron bronze-mounted sluice gates were designed for maximum opening with minimum structure. The installation is unique because inherently rigid flange frame sluice gates with wall thimbles were installed with attaching studs projecting to the front of the frame. This eliminated the need for excessive side clearance and saved on structural costs. Rodney Hunt also supplied precision-built interconnecting floor stands with twin stems on each gate for balanced, smooth operation.

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How Do U. S.-Swiss Designs Compare?

W. H. Holmes
Civil Engineer
Sacramento, Calif.

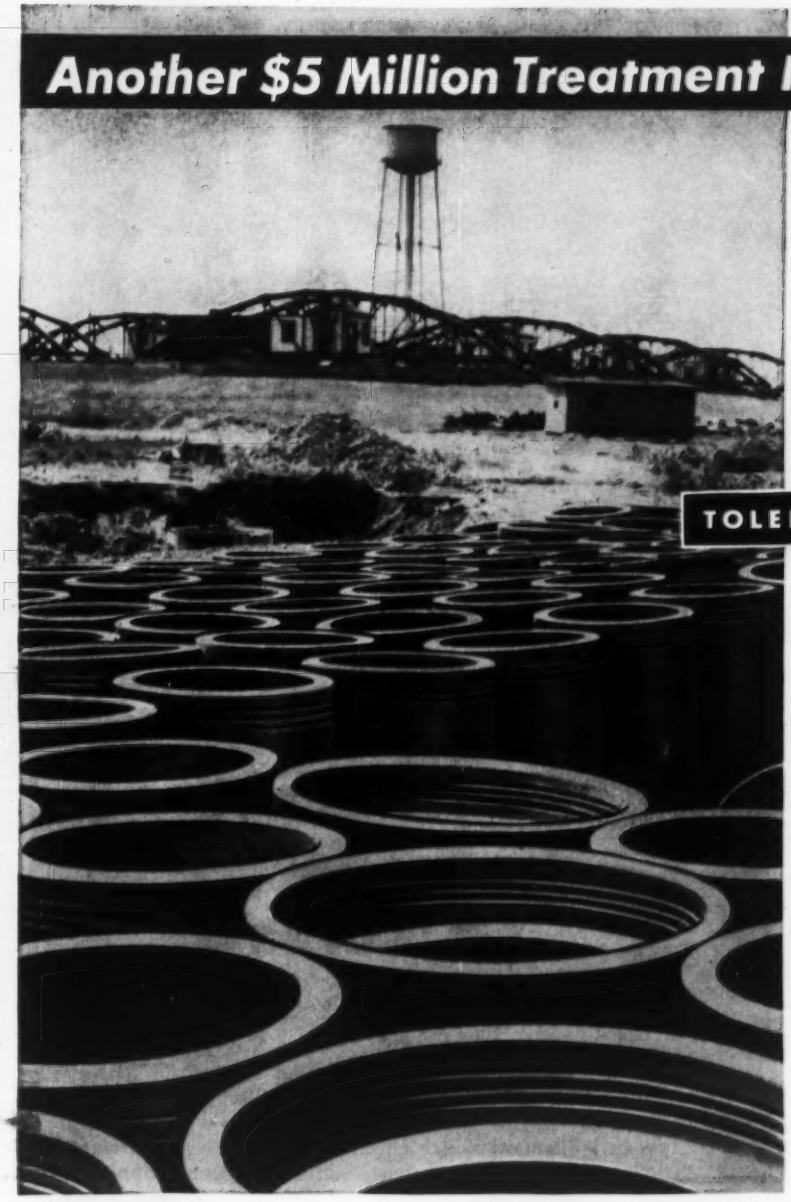
Because Grande Dixence Dam, under construction in Switzerland (ENR May 24, 1956, p. 34) is projected to be the world's highest of straight gravity concrete section, it is interesting to compare its design criteria with American practice and to note some of its differences from similar U. S. structures. In Hoover Dam, for example, which was designed by the U. S. Bureau of Reclamation as a composite arch and gravity section and where the gravity part carries less than the full hydrostatic loading, a base width of 91% of the height is used. In contrast, Grande Dixence, designed to carry full hydrostatic loading as a gravity section, has a base width of 77% of its height. Based on these figures, one is tempted to question whether the USBR was too conservative in design or whether the Swiss are too bold.

Another comparison can be made with Shasta Dam, a U. S. Bureau of Reclamation straight gravity section 600 ft high, whose base width is equal to its height. If its section is superimposed on the Grande Dixence section, with the high water line on the upstream face at the same point, and then its slopes projected to the 922 ft height planned for Grande Dixence, Shasta's base width would be 996 ft. This is 40% wider than the Grande Dixence section, and is primarily due to the upstream slope of Shasta.

Also, the maximum computed stress at the heel of Shasta Dam was 586 psi, and at the toe, 744 psi. Comparable stresses at Grande Dixence are given as 1,067 psi and 1,849 psi.

Since 1938, when Shasta Dam was built, the USBR has increased its permissible design working stresses for mass concrete under extreme loading conditions to 1,000 psi, except that in no case shall they exceed one-fourth of the maximum compressive strength as determined on 6x12-in. test cylinders at the age of one year. Even with this

Another $5 Million Treatment Plant Expansion



...WITH CLAY PIPE ON THE JOB!

TOLEDO, OHIO is keeping abreast of the needs of its growing population with a $5 million bond financed program for expanding and modernizing its sewage treatment facilities. Work on this two-year project is underway now, and one of the first materials on the job was *Clay Pipe* for utility lines.

Why Clay? Because it's chemically inert—completely impervious to corrosives that damage ordinary pipe. It can't rust or rot . . . can't corrode or disintegrate. Its slick vitrified surface insures faster flow, with no chance for waste deposits to build up. Important, too, is its *exclusive long-term guarantee* —positive assurance of protection until years after the last revenue bond has been retired.

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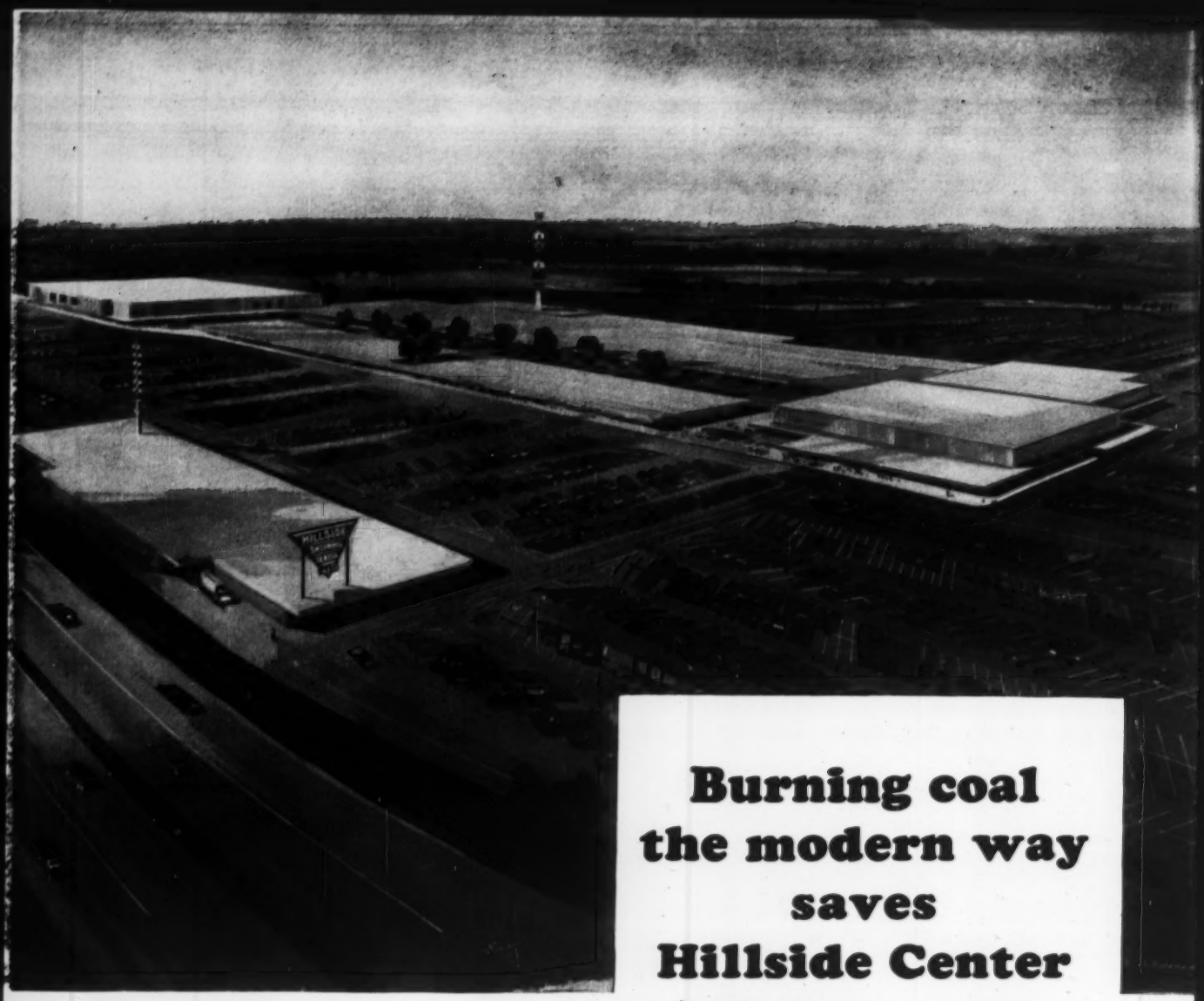

Burning coal the modern way saves Hillside Center $26,000 a year

The new Hillside Center, Chicago, Ill., is one of the country's largest and most modern shopping centers. Situated on a 59-acre site, it contains over 70 stores and offers parking space for nearly 5,000 cars. When Hillside Center was planned, exhaustive studies were made of prospective fuels . . . and it was decided to burn coal the modern way. For one thing, the initial economy of the mechanical system indicated coal. The cost of a complete coal system—boilers, coal and ash handling equipment, controls, etc.—fell within budget limitations. And, in view of limited space, the compactness of the system was an additional inducement. Finally, boiler room labor costs are at a minimum and actual operation savings with coal, compared to other fuels, is estimated at $26,000 a year.

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

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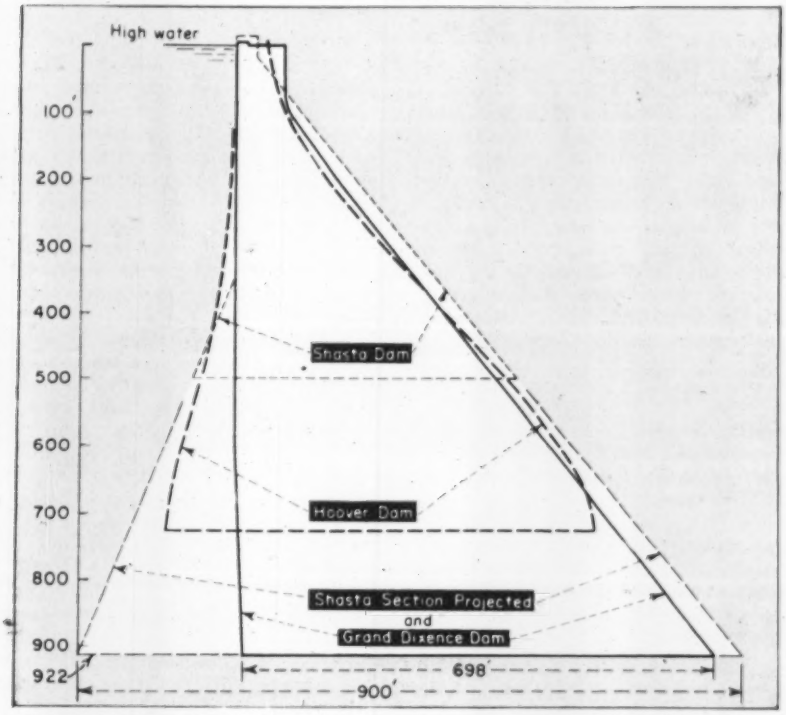
. . . Swiss and American dam designs compared



COMPARISON of Grande Dixence Dam section with Hoover and Shasta Dams. These two U. S. high dams have substantially greater base width than the higher Swiss dam.

liberalization, however, Bureau of Reclamation stresses are still considerably below those permitted in Switzerland, so it is interesting to investigate in more detail the Swiss design criteria.

One, given in the ENR article by Job Hunerwadel, chief construction engineer of Grande Dixence, is that "working stress on the upstream face at any given level shall be greater than 85% of the hydrostatic pressure at the same level."

Since the Grande Dixence section approaches a triangle with a vertical upstream face, approximate stresses may be found by an analysis of a homogeneous triangular section with apex at high-water level. The downstream slope, m, of a triangular section having a vertical upstream face, subjected to predetermined vertical pressure at the upstream face and with water at the apex is:

$$m = 1/(a - p)^{1/2}$$

Where m = tangent slope measured from the vertical

a = specific gravity of concrete = $w_c/w_w = 2.45$

p = pressure desired in percent of hydrostatic = 0.85

Then if:

w_c = unit weight of concrete = 153 lb per cu ft (given)

w_w = weight of water in pounds per cu ft = 62.5

$m = 1/1.265 = 0.79$, which is approximately equivalent to the Grande Dixence section. Hence, its design meets this first-criterion.

This Swiss criterion of working stress on the upstream face greater than 0.85 of the hydrostatic pressure may be compared with requirements of other designs. Maurice Levy, 61 years ago, proposed that the vertical loading on the upstream face exceed the full hydrostatic pressure. The downstream slope for a Levy section is:

$$m = 1/(2.45 - 1)^{1/2} = 0.833$$

The USBR used a minimum working stress in the upstream face greater than 67% of the hydrostatic pressure for Shasta Dam, but used a downstream slope of m = 0.81 projected to a point 22.5 ft above high-water level. It is evident from the above comparisons that this first criterion is not the cause of the great difference in width of the Grande Dixence and Shasta sections.

For reservoir empty, vertical stress at the heel of the Grande Dixence triangular section is:

$s_h = w_c\, h/144 = 980$ psi

and vertical stress at toe is zero.

For reservoir full, without uplift, vertical stress at heel and toe are respectively:

$s_h = 0.434\, h(a - 1/m^2) = 340$ psi and

$s_t = 0.434\, h/m^2 = 643$ psi

When uplift is included, vertical stress at heel is zero; vertical stress at toe is 643 psi; and principal stress at toe is 1040 psi.

In any homogeneous rectangular horizontal section subject to vertical loading, the position of the loading determines the distribution of the vertical stress. Conversely, knowing the stress at heel and toe, the position of the resultant of forces can be determined. In this case, where the heel stress is zero, the resultant of weight of concrete, hydrostatic pressure on vertical face and uplift falls at the downstream third point. Hence, any additional horizontal loading, as from earthquake effect, moves the point of application of the resultant beyond the third point and produces tension in the upstream face.

According to Hunerwadel's article, "the second criterion was that, for full reservoir plus earthquake effect, the resultant of all forces—dam weight, hydrostatic pressure and uplift—shall stay within the central two-thirds of each horizontal section." If this is a correct statement of the Swiss requirements for design of gravity dams it is evident that high tensions are permitted. American practice has been to avoid tension in mass concrete design, and the U. S. criterion is that the resultant of all forces shall stay within the central third of each section. This requirement of the resultant falling in the middle two-thirds instead of the middle one-third is an important difference in design.

In the case of the resultant falling at the third point of a rectangular base, and assuming straight line distribution of stresses, the stress at heel and toe is given by the equation:

$$s = \frac{W}{l} \mp \frac{6M}{l^2}$$

where s is unit stress

W is total weight on base

l is length of base

M is moment about centerline of base = Wl/6

Then $s = W/l \mp W/l = 0$ and $2W/l$

In the case of the second Swiss criterion, with resultant falling at the 1/6 point, then $M = Wl/3$ and $s = W/l \mp 2W/l = -W/l$ and $3W/l$

Hence, the maximum tensile force permitted for earthquake effect is equal in magnitude to the average unit loading on the section, or $w_c h/2 = 490$ psi.

This criterion is incompatible with the first criterion, which requires no tension in the upstream face with full reservoir and uplift equal to 85% of hydrostatic head.

• **Concrete strengths**—It also may be noted that, when making a concrete mix, the Swiss designers permitted 50% more stress when including earthquake effect than they permitted for static loadings. Thus, for a computed stress of 1,000 psi due to static forces, a con-

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crete mix was designed having a strength of 1,000 × 4.2 = 4,200 psi. But for a computed stress, which included earthquake effect in the amount of 1,500 psi, a mix was made requiring a strength of 1,500 × 2.8 = 4,200 psi.

Some differential is not a new idea, and recent American practice has permitted some higher stress in structures for infrequent and short time loading than for static or dead loads, but the 50% differential as used by the Swiss engineers seems high.

The Swiss concrete mix strength is determined by the strength of 12 in. cubes tested at 90 days. On the basis of various U. S. test data it may be assumed that 90% of the Swiss 90 day cube strength is approximately equivalent to the USBR one year standard test on 6x12 in. cylinders. Hence, by USBR standards, maximum design stress in a dam would be limited to 900 psi if tests of concrete strength were made with 12 in. cubes at 90 days. The maximum calculated stress at the downstream toe of Grande Dixence is given by Hunerwadel as 1,849 psi, which is double the present permissible USBR standard.

• **Resistance to sliding**—One examination, customarily made in design, is a comparison of the ratio of horizontal forces to vertical forces. This ratio is designed to be less than the angle of friction of the material.

In a triangular dam section with water at the apex of the triangle, this ratio is independent of the height of the dam. The ratio is increased when uplift is included, and it is still higher when horizontal forces due to effect of earthquake are included. The assumed magnitude of the earthquake force used in the design was not stated. However, by the use of Westergaard's method and an acceleration of 0.1 gravity, horizontal forces exceed the vertical forces when uplift is included.

To prevent this ratio from being in excess of the angle of friction, when earthquake effect is included, the design of any high straight gravity dam is revised from a triangle with a vertical upstream face to a non-vertical upstream face or a broken slope section as was done on Shasta Dam. The additional weight of the upstream sloping section and the vertical component of the water loading on the sloping section improves the ratio. Also, the overturning moment due to water loading is decreased by the use of an upstream slope.

• **Stage construction**—The above comments on stress distribution are based on the assumption of a monolithic and homogeneous structure. In this connection it is significant to note that it is proposed to build Grande Dixence first to a 584 ft height, and later raise it to 922 ft. Now, unloaded blocks cooled to the same temperature prior to grouting of the keyways may be assumed to approach a monolithic structure. But stage construction, as proposed for Grande Dixence, implies use of the reservoir prior to completion of the dam. Hence, some blocks will be stressed by partial water loading prior to the placing and grouting of adjacent unloaded blocks. This procedure alters the assumption of the section being a monolith.

Also, due to the fact that the cement content will vary in different sections of the dam to meet stress requirements at these sections, the modulus of elasticity of the concrete will vary, thus partly voiding the assumption of the structure being homogeneous.

• Methods proposed to be used for making adjustments in stresses due to stage construction of Grande Dixence Dam were not stated. The only record found of raising a straight gravity dam that was in excess of 200 ft in height is that of the Marshall Ford Dam in Texas (ENR May 13, 1937, p. 712). It was 204 ft high and was raised to 278 ft by the addition of an upstream slab or wall, grouted to bond with the original upstream face after the wall was completed. The O'Shaughnessy Dam, in California, a gravity structure curved in plan, was raised by an addition on the downstream face, but this addition was designed in part to carry thrust by arch action.

As there is no precedent for raising a 584 ft high straight gravity dam to a height of 922 ft, design details of how the Swiss engineers propose to bond various sections to make a homogeneous monolithic structure would be a welcome contribution to high gravity dam design.

• Swiss Engineer Replies

Mr. Hunerwadel, after reading Mr. Holmes' article, made the following reply:

"A comparison between the different high dams in the U. S. and Switzerland can well be made, but should take also into consideration the cross section of the valleys, which can largely influence the decisions for liberalization in design.

"The valley at the point where Shasta Dam is erected is quite open, while at the Dixence Dam site the valley is of a very narrow V-shape. This fact has not been clearly stated in the design description for Grande Dixence Dam, and has greatly permitted certain liberalization in the design.

"It also may be said that the conditions imposed by the Swiss government

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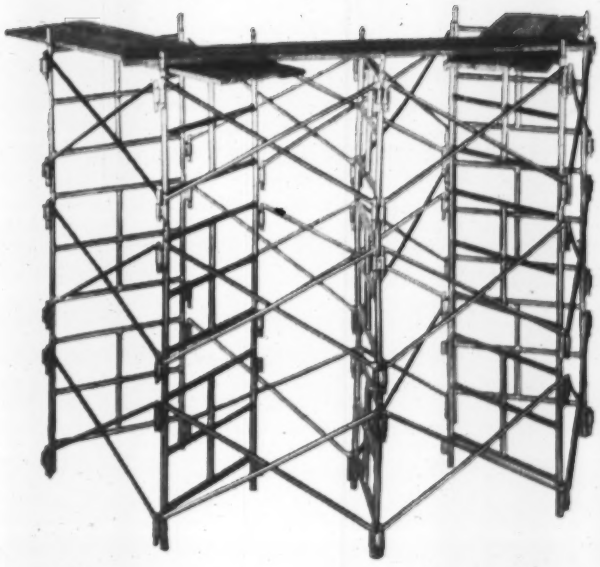

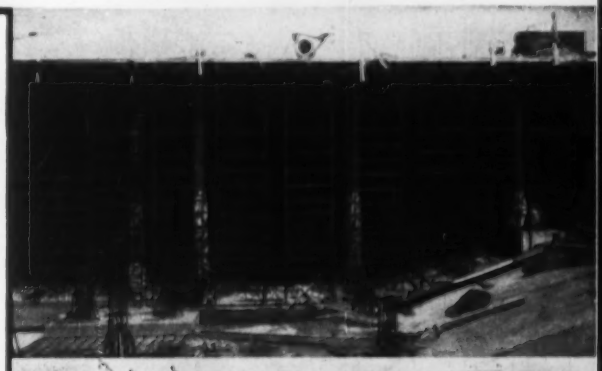

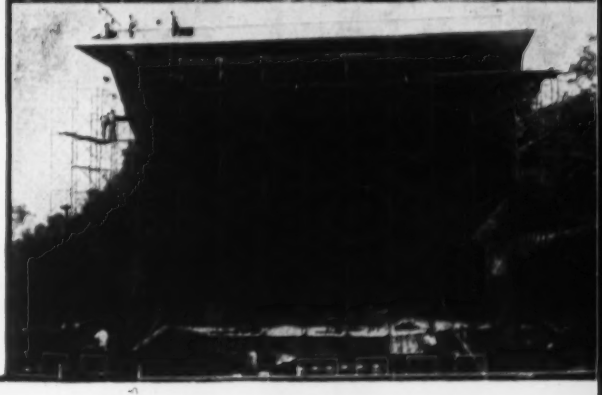

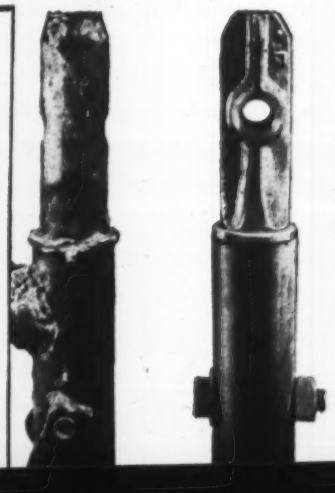

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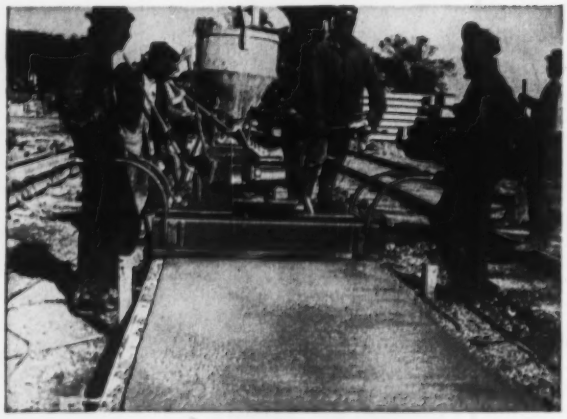

In addition to the Power Midget Vibrator, Stow Manufacturing Co. has developed and thoroughly tested this revolutionary machine for striking off thin precast slabs; a vibrating screed with **two** beams. **Working with this Twin Beam Screed gives the effect of making two passes at once.** The vibrating head transmits the vibration evenly to both beams. Thus as the screed is worked along, the first beam strikes off the concrete, while the second beam gives the concrete a final finish! For more information on the Power Midget Vibrator, or the Twin Beam Screed, contact your Stow Distributor. In most cities, you'll find him listed under "Concrete Vibrators" in the yellow section of your telephone directory. Or, if you prefer, send in the coupon below. For complete information on Vibrators, Screeds, Roto-Trowels, Concrete Grinders, write for Stow Catalog 560.

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have a specific value for the Grande Dixence Dam, and cannot be applied as a general rule to all dam designs for Switzerland.

"This hydroelectric development is done by private companies and not by the government.

"If some liberalizations in the design for Grande Dixence Dam have been made, they are included in the second criterion, which says that, with earthquake effect and full reservoir, the resultant of all forces due to the weight of the dam, hydrostatic pressure, mass of dam and water and uplift shall stay within the central two-thirds of each horizontal section.

"As to the stage construction planned for Grande Dixence Dam, a paper giving the design details to bond the various sections to make a homogeneous monolithic structure was presented at the last International Congress on Large Dams at Paris in 1955."

The paper, which is designated C-34, can be obtained from the Commission Internationale des Grands Barrages, 91 rue Saint-Lazare, Paris (9), France.

It is in French, but a short summary in English reads as follows:

The method adopted forsees the construction of the first stage (height 594 ft) with a stepped down-stream face.

The second stage is raised by adding vertical columns or blocks on these steps.

Each successive stage is constructed in the same way.

The open slots, separating the columns, are necessary to allow the columns or blocks to be raised despite varying water levels.

The slots must be filled only when the lake is empty in order to avoid a reduction of the compression in the upstream face.

Photoelastic and deformation tests were carried out on models to determine the number and best positions for the slots.

Their effect on strain distribution also was studied.

Other tests have checked the influence of the stepped down-stream face.

The open slots also permit the blocks to contract and cool off more readily.

The vertical stepped faces are not flat but saw-toothed.

These saw-toothed tenons are intended to assure a good strain transmission between the different stages of construction.

The shape of the tenons, also studied on models, have their faces inclined at 75 and 120%. They are approximately parallel to the directions of the principal strains.

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joists, studs, columns, decking

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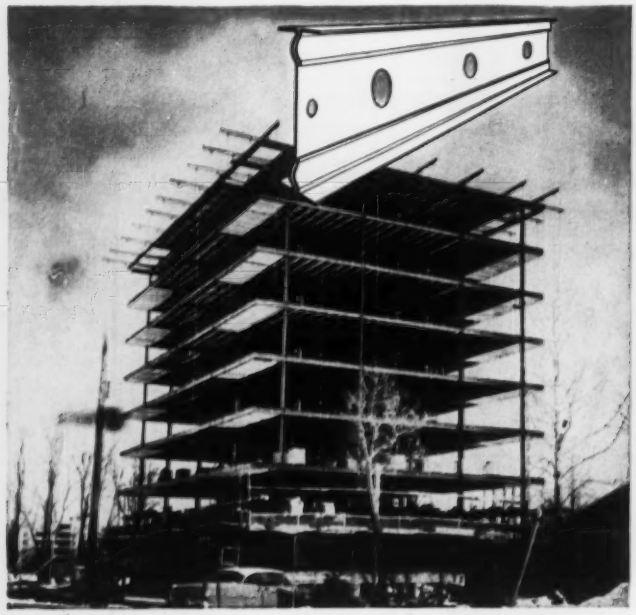
Stran-Steel's complete structural system brings these advantages to the architect and owner:

VERSATILITY—Many structural variations are possible with this versatile system in the design of walls, roofs, partitions, canopies, floors, even entire buildings. A few are illustrated below.

ECONOMY—Savings in the use of steel architectural products mean more economical construction, resulting in lower bids to fit budget limitations.



Eight-story luxury-type apartment building, New York City. Builder: Alfred Levitt.

New Maximlite-designed Northeast Elementary School, Findlay, Ohio. Design by: John Auferoth.

NAILABLE JOISTS AND STUDS—Stran-Steel joists are light gage steel members formed from strip steel and welded back to back to form the special nailing groove. They provide a non-combustible, economical and permanent framing system to which collateral materials can be quickly and easily applied. Available in 6″, 8″, 9″, 10″ and 12″ depths and in gages of 12, 13, 14 and 16. This range of depths and gages satisfies almost any load requirement.

The distinctive nailing groove permits rapid installation of collateral materials. Ordinary nails can be used and tightly clinched in a grip of steel, yet can be readily removed with a claw hammer.

STRUCTURAL COLUMNS AND BEAMS—Stran-Steel cold formed members are "C" section shapes and are available in special steel having a yield of 40,000 p.s.i. These sections are manufactured in a variety of sizes and can be used in many combinations as structural columns and beams. Stran-Steel cold formed sections are strong and durable, yet provide weight-saving and cost-saving economies. They are available in 8″, 10″, 12″ and 14″ sizes and gages ranging from 6 to 14.

NEW WIDE FLANGE STRUCTURAL SHAPES—Eight choices of wide flange I-section structural shapes are now available: Two with 6″ flange, 8.62″ and 9.62″ in depth; six with 8″ flange, ranging from 8.75″ to 12.75″ in depth.

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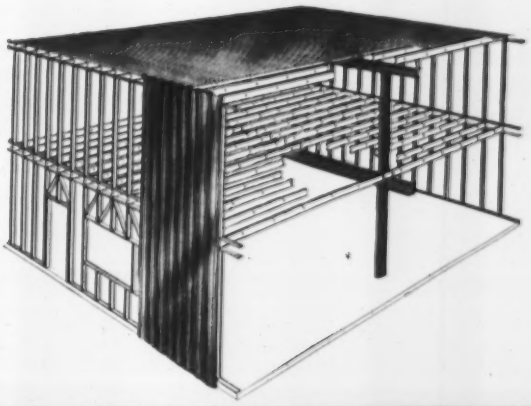
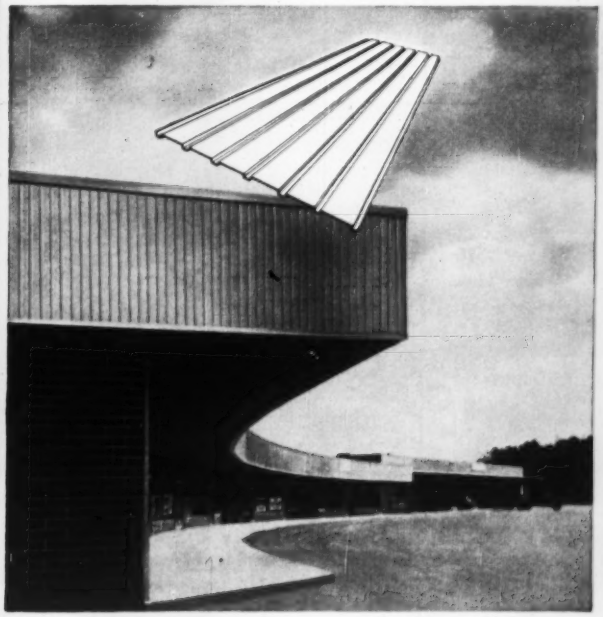
structural system—

and curtain wall

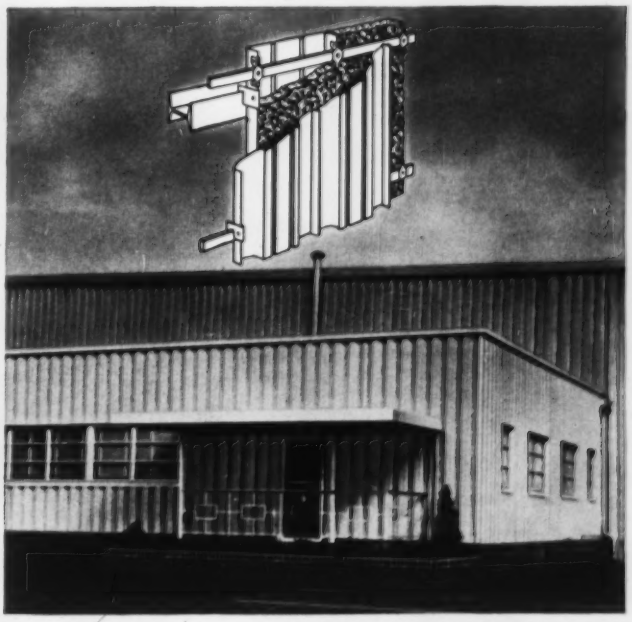


STRENGTH—Stran-Steel nailable joists, for example, have a yield point of 40,000 p.s.i., approximately 20% higher than that of most commercial mild steel. This extra-strength weight advantage prevails throughout the range of these products.

Stran-Steel products are ideal for schools, apartments, shopping centers and industrial plants.



Cleveland's Parkland, $30,000,000 residential and shopping community. Project developer: Don Loftus. Architect: Wm. E. Harris.



Large, modern warehouse, Oakland, California. Owner: Bigge Drayage Co. Engineers: D. Y. Long Co.

RIBBED ROOF DECK—Stran-Steel galvanized ribbed deck is designed primarily for use with Stran-Steel joists. However it is also useful as sidewall skin in certain applications. Two types are available:

1. Lightweight, nailable roof deck with ribs on 4″ centers. Available in 22, 24 and 26 gage, live load carrying capacities range from 32 to 206 p.s.f., depending on gage, with spans from 2′ to 4′.
2. Heavier roof deck for longer spans has ribs on 6″ centers. Available in 18, 20 and 22 gage. Live load carrying capacities range from 12 to 267 p.s.f., depending on gage, with spans from 3′ to 9′6″.

CURTAIN WALL—Stran-Steel curtain wall, made of exclusive *Stran-Satin* panels, combines a satin-smooth surface free of bright spangles along with the permanent protection of a non-corrosive zinc coating. It provides the low cost of steel with the eye appeal of far more expensive materials.

Stran-Steel curtain wall consists of two basic panels, insulation and concealed fasteners. This wall is quickly assembled on the job simply by using a button punch. Panels are never pierced or marred by bolts, screws, rivets or holes. Curtain wall panels are available in 18, 20, and 24-gage steel, in lengths up to 54 feet.

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WATERS POLLUTED by these duck farms are now clean enough, so that . . .

The Blue Point Oyster Grows Again

The Long Island Blue Point oyster has returned—thanks to pollution-control measures, dredging and a fortuitous hurricane.

Although there is still more work and research to be done, the future of this marine delicacy seems assured. But until the New York State Water Pollution Control Board stepped in, a battle of duck against oyster had gone completely to the ducks. (ENR June 12, 1952, p. 47).

Duck farms on Long Island's Moriches Bay had so polluted its, and adjoining Great South Bay's, water that the oysters being grown in Great South Bay didn't stand a chance—what with ten ducks being the pollution-equivalent to one human.

Duck droppings, heavily laden with phosphates, fertilized algae growths which clogged the gills of the oysters. Then came parasitic, oyster-attacking worms whose growth was stimulated by the algae blooms. Finally the oysters were completely wiped out. The waters had reached the point where it was also difficult for navigation and unfit for bathing in some places

Help for the oyster hove into sight when the state pollution board classified the waters in October, 1951, and a program of abatement of the pollution was started. First phase was a research and test program during 1952 and 1953, in which the Long Island Duck Growers Marketing Cooperatives, Inc., cooperated with state sanitary engineers to find the most economical method for cleaning up the waters. The answer had to be inexpensive; even Imhoff tanks, the simplest kind of combined settling and digestion device, were ruled out as too costly.

• **Flushing did most**—One first step contemplated was dredging of Moriches Inlet to allow flushing of the polluted bays. Here nature helped. A hurricane in 1953 opened up the inlet to the extent that only a nominal amount of dredging was necessary.

This flushing of the bays proved to be the big factor in cleaning up the polluted waters. In fact, the state pollution board minimizes its own efforts and considers the flushing to be mainly responsible for the resulting cleanup.

But to supplement the good conditions created by the flushing, two methods were developed during the research and test period for clarifying the waste waters. Both methods involve lagoons. The ducks are force-fed, which produces relatively undigested droppings that run high in settleable solids. This type of waste lends itself to the use of sewage lagoons—big settling basins.

• **Lagoons help**—System number one is a series of lagoons scooped out upland from the duck runways. (The runways are duck ponds diked-off close to shore.) The polluted water is pumped into the upland lagoons—five in all for each farm—for a detention time of approximately 2 hours. The clarified water is then allowed to return to the bay.

Each lagoon is used for about one month before water from the duck run is pumped into the next one. The accumulated sludge is thus allowed to dry out before it is taken out to be wasted—at present it is too high in phosphates and nitrates to use as fertilizer.

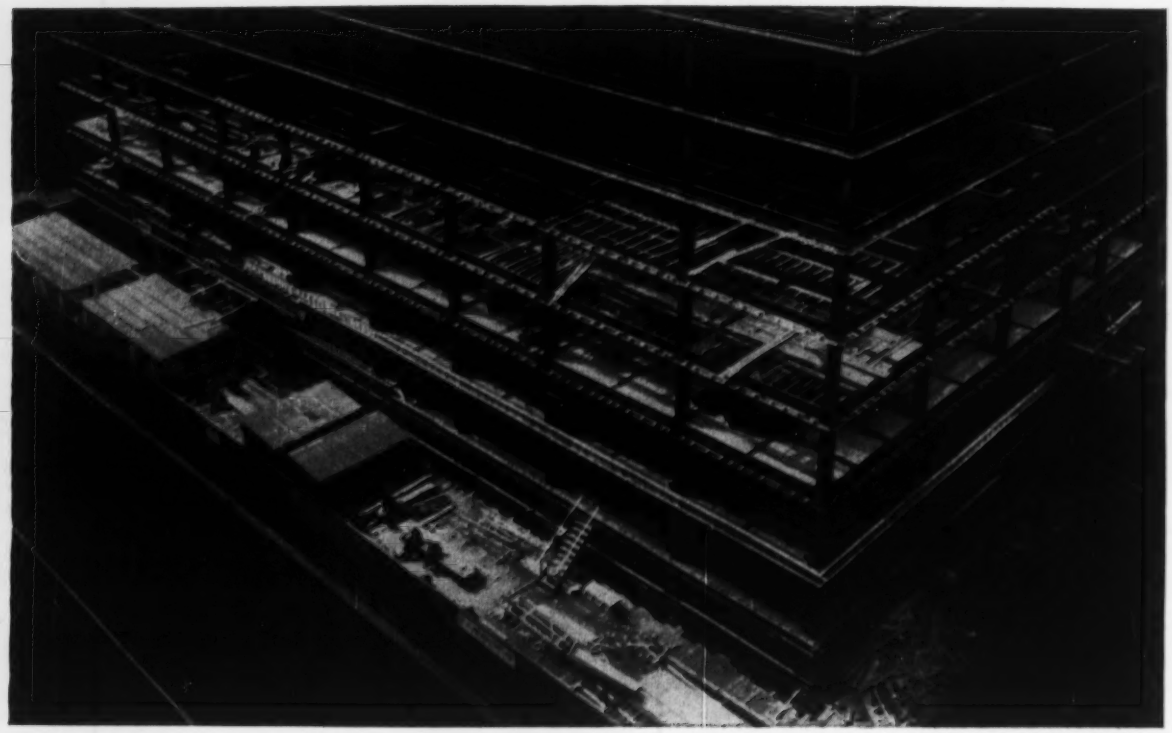
The other system uses sedimentation basins at the outflow ends of the duck runways. Designed by Alden Young, Riverhead consulting engineer for the duck growers, these "underwater lagoons" effect a high removal of settleable solids, 50% BOD removal and some removal of phosphates and nitrates. The resulting sludge is scooped out by a clamshell bucket and also wasted. Although this system is producing adequate results, more laboratory work is being done to determine the efficiency of this type of treatment.

• **More to do**—Chlorination of the effluent of both the underwater and upland lagoons was tried during the research period. But preliminary results indicated too high a cost for the duck growers. More research is to be done on some means of disinfecting the clarified waters to deal with the bacteria entering the bay waters.

However, both systems are working well enough so that—coupled with the flushing—pollution is reduced to the point where the first oysters in a number of years were harvested these past few seasons.

Of 52 farms under pollution board orders, 17 have installed upland lagoons, 20 are using the so-called underwater lagoons, and 7 are no longer raising ducks. According to John E. Harrison, senior sanitary engineer of the White Plains Regional Office of the State Health Department—which is doing the follow-up work on the abatement program—a large part of the present work is inspection of these farms to see that they are complying with schedules set up by the pollution control board.

And it should not be long before the bay waters will again be producing the big Blue Point oyster harvests that were commonplace before pollution set in.



All-Welded Framework *for 26-story Bank of New York Building*

Welded design for 26-story framework selected for economy

ALTHOUGH originally designed for riveting, the bid for this 6000 ton Bank of New York Building framework was let for a welded design. Comparisons in steel requirements and construction costs were primary factors in deciding upon welded design. For extra speed in fabrication and erection, connections were designed to make maximum use of fast down-hand welding. Structural work was by the Dreier Structural Steel Co., Inc. of Long Island City using Lincoln "Fleetweld 5" and "Fleetweld 7" electrodes; design was by Voorhees, Walker, Smith and Smith, architects and engineers.

Similar benefits through welding can be duplicated on essentially every type of building and bridge. Write Lincoln for application information.

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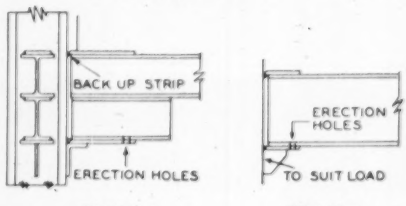

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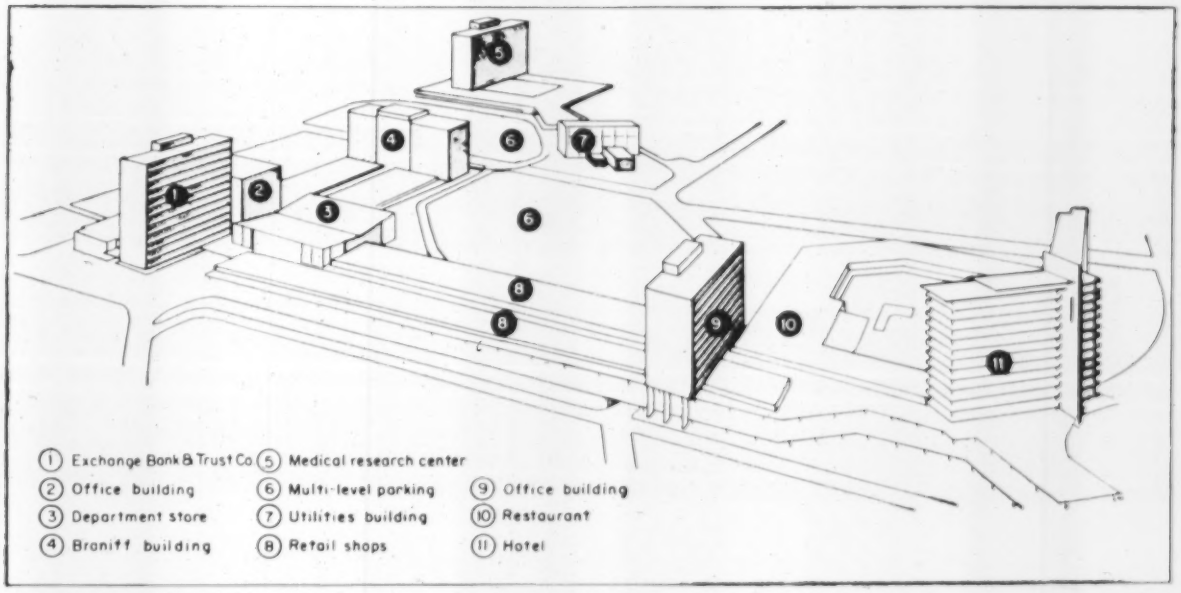
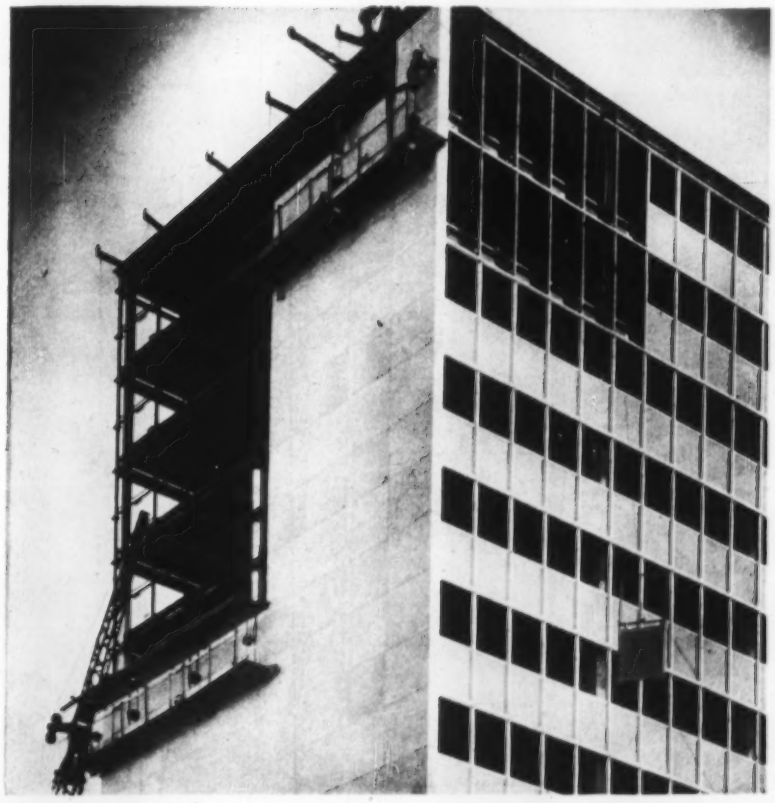


Engineering and construction advances pace this $125 million . . .

City-Within-A-City Rising in Dallas



BANK BUILDING features precast sandwich walls, metal curtain walls, movable interior partitions, double-duct air system with movable outlets.

A self-contained "commercial park" is now being built on a 120 acre site a short distance from downtown Dallas, Texas. This grouping of business offices, retail stores, a professional building and a hotel will represent one of the most advanced developments of the city-within-a-city concept yet attempted.

Exchange Park, as the center is called, incorporates many of the most recent building techniques, and sets the pace for a few new ones besides. The pacesetting features:

- A central utilities plant serving eight major buildings, which has provision for 12,000 tons of refrigeration, the largest single air-conditioning installation yet planned.
- Truck and utilities tunnels that interlace the site.
- A standardized system of movable metal partitions that can be assembled on modules of 6 in. except along exterior walls, complemented by easily movable ceiling air outlets and snap-in lighting fixtures.
- A hurry-up construction technique wherein the owner at an early date received formal bids from suppliers of critical materials, issued purchase orders, and incorporated the orders in the construction contracts.

The Dallas project also features sophisticated use of these modern materials and systems:

- Double-duct temperature control system wherein hot and cold air is

. . . City-within-a-city: Huge central utilities building

AERIAL VIEW shows Bank Building at left, foundations for Braniff Building and central utilities building (angular shape). Dallas' airport is in background.

blended in mixing boxes and continues on to outlets through a flexible duct.

- Precast concrete sandwich panels 3 in. thick with a ¾ in. layer of dense quartz facing.
- Porcelain-enameled metal curtain walls, 2 in. thick, insulated with paper honeycomb filled with vermiculite.
- Projecting aluminum shades for sun control at windows.

And for good measure, the engineers had to enclose a creek running through the site in a 15 ft storm sewer.

• Overall project—When completed, Exchange Park will cost about $125 million and comprise 875,000 sq ft of office space in four buildings, a 1,000-room hotel with 440,000 sq ft of usable space, a 450,000 sq ft medical research and office center with 150 bed clinical hospital, a major department store with an anticipated 350,000 sq ft, about 150 retail shops occupying a total 650,000 sq ft, a utilities building housing five 50,000 lb per hr boilers and 12,000 tons of refrigeration compressors, a mile of 40 ft wide air-conditioned mall area and double and quadruple-level parking for 15,000 cars.

At this time, $10 million of contracts have been let covering construction of two office buildings, the utilities structure, storm drains, tunnels and attendant site work. All outside walls are complete for the Exchange Bank Building, and foundation work is completed for the other two buildings, one to be headquarters for Braniff International Airlines.

• Central utilities—The utilities building is being constructed with two of five boilers and three 1,000 ton compressors installed initially. Four 2,250 ton compressors will be added as the project load warrants. The compressors are steam-driven units equipped with variable-pitch propellor-type compressor blades, which achieve better than 80% efficiency at loads as low as 30% of rated capacity.

Freon is the refrigerant used to chill water at the central location. This water is then piped to the various buildings through the utilities tunnels. At each building, centrifugal blowers propel air over chilled water coils and then on to mixing boxes throughout the building.

Steam at 235 psi and 400 F drives the compressors and then is utilized at 5 psi for boiler water heating. Steam is sent at boiler pressure to each building where pressure is reduced. Hot air is produced in a blower-coil similar to the chilled water setup and is sent to the same mixing boxes. Thermostats in each zone control each mixing unit, which varies the proportions of cold air and hot air as required for the particular space. Individual zones vary in size from 80 to 200 sq ft.

Fresh air is continuously introduced at both hot and cold air blowers. Return-air ducts deliver part of the return air to the main units, the remainder being exhausted into the equipment rooms.

A double-duct system is almost a necessity in places like Dallas, where on many days of the year one side of a building will require cooling and the other heating. This system also simplifies humidity control in that reheating of air dehumidified by cooling is accurately controlled.

A supervisory control center will be installed to provide a visual representation, at any time, of the operating conditions throughout the utilities plant. This center will be a 30 ft long enameled steel wall on which every component of the plant will be represented in miniature, including the piping systems in color-coded lines. Jewel lights will indicate equipment in actual operation, and fluid pressures and temperatures will be recorded continuously.

Besides the boilers and turbine compressors, the utilities building contains provision for nine cooling towers, two of which are being installed now, and adequate shops for project maintenance personnel. In addition to the usual mechanical, electric and carpenter shops there will be a garage and paint spray room.

Exchange Park has its own 250 gpm well, which will supply water for cooling tower makeup and for landscaping. It also can be used for boiler feedwater. Present plans call for using city water for domestic supply and boiler feedwater. The project has its own 250,000 gal fresh water reservoir.

Sewage and storm water will be discharged into city facilities. Aside from the novelty of the storm sewer enclosing an often-dry creek, it is much like any other hefty 15 ft horseshoe sewer.

The local electric utility will deliver 13.2 kv power to the site, where it will be distributed by the owner via a 13.2 kv loop and unit substations to the various buildings. The utilization voltages are 277/480 v for fluorescent lighting and power and 110 v for incandescent lights and office equipment.

• Tunnels—From the utilities building, tunnels 7½ ft high and 12 ft wide housing chilled water, steam and appropriate return lines—three mains in all—fan out to the various buildings in Exchange Park. Where they parallel truck tunnels, the utilities tunnels are located under them.

These truck tunnels will service all buildings in the project, with no heavy traffic to be permitted at ground level. Altogether, there will be 4,000 ft of truck tunnels, 32 ft wide and 14 ft high. This doesn't include an underground plaza surrounding the medical research center. Tunnels are constructed of cast-in-place concrete.

The site is planned for single, double and quadruple-level parking, with all levels except the topmost underground. At present, surface parking only is being constructed, this on 6 in. blacktop using natural rock asphalt.

• Flexible office space—The need for extremely flexible office spaces stemmed from the owner's renting policy of limiting leases to three years. For the most part, the only permanent walls in the office buildings are around a utility core and the exterior.

The Exchange Bank Building, for example, is 60 ft wide with one row of columns down the middle. Assuming

Proven construction worker available

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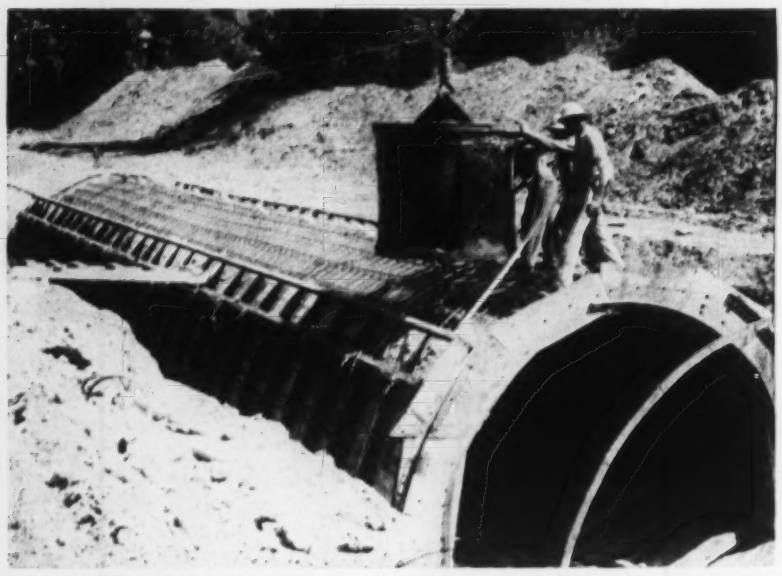

SITE DEVELOPMENT PROBLEM was enclosing an often-dry creek. Hefty 15 ft horseshoe storm sewer does the job.

tenants desire an 8 ft. corridor, convenient 22 ft and 30 ft deep spaces will be available.

The exterior walls on the long sides of the building are glass and porcelain panels installed in a 5 ft module, limiting dimensions of offices along these walls. But interchangeable combinations of movable metal interior partitions available in sections 3½, 2 and 1½ ft wide, enable adjustment of all other office dimensions to within 6 in.

The panels themselves will be available in a wide variety of colors and finishes. Exchange Park plans on keeping a healthy stock on hand.

The standard floor surface for the office section of buildings will be vinyl tile. However, a lessee may have the type of floor covering or color changed in special cases.

Ceilings in the office spaces are hung 12 x 12 in. perforated acoustic metal panels backed by 1 in. of glass-fiber sound absorbent. Recessed troffer fluorescent fixtures measure 1 x 4 ft. Ceiling air registers generally are 12 x 12 in. and are fed by flexible hoses from the mixing boxes. This modular arrangement complements the interior partition system regarding flexibility.

• **Exterior treatment**—The two office buildings now under construction have welded steel frames and concrete floors supported by cellular decking. Concrete fireproofing is sprayed on the undersides of ceilings and on mesh-wrapped columns. Exterior treatment of both structures is similar. Narrow end walls consist of 3 in. marble and quartz-faced precast concrete panels, an 8 in. air space and two rows of 4 in. lightweight concrete block backup. Interior is plastered. This construction offers a **U** factor superior to a 12 in. brick wall.

The end wall panels are generally 6 x 7 ft. Each is 3 in. thick, composed of a ¾ in. outer layer of closely spaced chips of quartz and marble bonded by a white cement mortar. After this layer is cast, 2¼ in. of 6,000 psi concrete is placed over it. Panels are moved to the job site after a minimum of 14 days curing.

Panels weigh 1,500 lb each, and are attached to the building by bolts and clips embedded in the panels.

On the longer side walls, 5 ft wide porcelain-enameled metal and glass panels are used. Plate glass ¼ in. thick is employed, while the spandrel sandwich has a 16 ga outer surface, 1½ in. of paper honeycomb core filled with vermiculite and an 18 ga backup sheet of galvanized steel.

The spandrel backing is completely concealed by metal cabinets that house air ducts. At present, the air outlet is in the vertical face of these cabinets, but a bottom diffusing system is being considered.

• **Eyebrows**—The exterior panels are attached to the steel frame from the inside by bolting to pressed-tube mullions. Projecting aluminum shades are fastened in the same manner.

Aside from architectural considerations, the combination of ordinary glass and the projecting shades, which eliminate the need for interior window covering, is about equal, on an annual cost basis regarding air-conditioning and heating, to a system comprising thermal glass and interior window covering. However, a system of exterior shades and thermal glass would have exceeded the cost of the adopted setup considering initial operation and maintenance expense. The designers feel that the architectural value of the aluminum projections is substantial.

For a center such as Exchange Park, allocation of central service and site improvement costs to each building requires careful study. For this project, initial and maintenance costs for service streets, parking areas, sidewalks, and landscaped areas will be ratioed to the automobile parking requirements for each building.

Mail area costs will be supported according to frontage on the mall, while truck tunnel entrances will be keyed to frontage on the mall over the tunnels. The tunnels themselves will be ratioed to stores and buildings having tunnel access.

Initial cost of the central utilities building will be allocated on the basis of refrigeration tonnage required. Individual leases will include provision for operating and maintenance costs either on a square foot basis or by separate meter billings.

• **Advance purchase orders**—Contracts for the Bank, Utilities and Braniff Buildings were let in October, 1955, February, 1956, and July, 1956, respectively. Between four and six months prior to the construction awards for the latter two buildings, when design was well enough along, the owner called for bids from suppliers for such critical items as structural steel, metal partitions, turbine-compressor units, boilers, metal window walls, electrical equipment and elevators. He issued purchase orders to the lowest selected bidder with the proviso they would be turned over to the contractors receiving the construction awards.

All paperwork relating to these arrangements was incorporated in the specifications for the construction contracts. In most cases, the purchase orders were of lump-sum type, with unit prices for overages and underages.

For the 14 story Exchange Bank Building, containing 220,000 sq ft, general, mechanical and electrical prime contracts totalled $4 million. Although there were three prime construction contracts, the general contractor is given responsibility for coordination and was asked to include a fee in his bid. Bids were by invitation only, and eight were received.

Prime contracts for the 10 story Braniff Building, with 200,000 sq ft of usable space, totaled $3.5 million, of which $1 million was covered in purchase orders. Corresponding figures for

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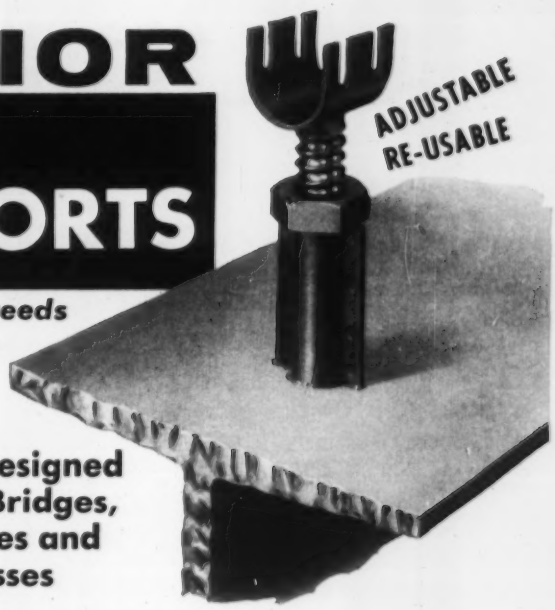

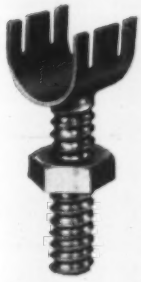

ADJUSTABLE SCREED HOLDER

Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 1¼" or 1½" I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjustment.

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On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

PERFORMANCE

Superior's Heavy-Duty Adjustable Screed Supports have been used on turnpike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. *Write for Bulletin.*

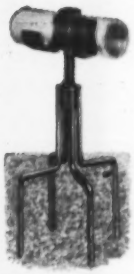
HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.

Adjustable Standard SUPERIOR SCREED CHAIRS

FOR FORMED SLABS 4½" AND GREATER

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.



FOR SLABS ON FILL

With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.

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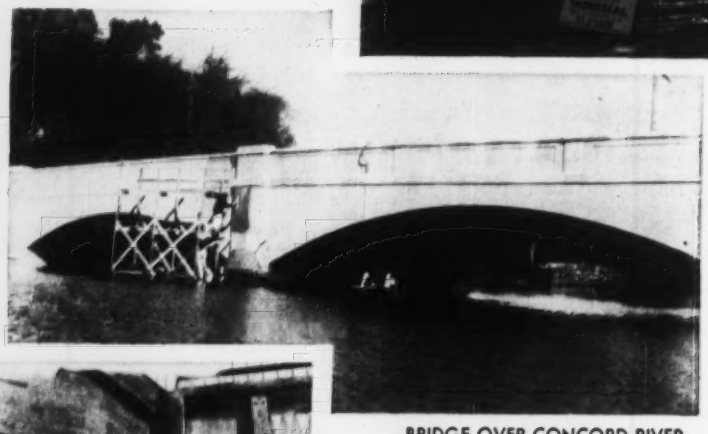
Freeze-thaw cycle following water and moisture penetration, also swelling of reinforcing rods from moisture contact, cause masonry destruction.



BRIDGE OVER CONCORD RIVER
ROUTE 3, BELLERICA, MASS.

Workmen on scaffold patch spalled and cracked concrete with THORITE and seal surface with THOROSEAL.

Area at left chipped to sound masonry. It will then be patched with THORITE *Nonshrink, Non-slump 20-Minute Set Patching Mortar*, without necessity of costly forming, finished by application of Thoroseal.

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NEW EAGLE, PENNSYLVANIA •• CENTERVILLE, INDIANA

the utilities building are $2 million and $500,000.

The ordering of material and equipment in advance of construction accomplished the construction speed-up desired and, incidentally, anticipated several price rises.

Nonetheless, under ordinary supply conditions, both the owner and the engineers would have preferred normal ordering procedures.

Another interesting aspect of the Exchange Park project is the physical appearance of the various contract specifications. They reflect the modern look of the architecture and engineering in that different sections, such as instructions to bidders, bid forms, general clauses, the purchase orders and technical requirements, are mimeographed on different colored paper.

This is a small point, perhaps, but it was accomplished at no extra cost and with very pleasing effect.

• **Who's who**—Lane, Gamble & Associates are the architects, engineers and site planners. Clifford Lane and Gene Gamble are principals.

Site engineering is being performed by Powell & Powell. Blum & Guerero did the mechanical and electrical engineering for the Exchange Bank and utilities buildings.

The mechanical and electrical on the Braniff Building was by William K. Hall & Associates. All engineering firms are from Dallas.

Designs are now under way for the store buildings between the Bank and Braniff Buildings with contracts scheduled to be let in the near future.

The owner of Exchange Park is William A. Blakley, Dallas lawyer, insurance executive, oil man and recently appointed U. S. Senator.

George M. Bostock, vice president and general manager of the Exchange Park Co., is supervising construction for the owner.

Contractors on the Bank Building are:

Robert E. McKee, Dallas, general; Fischbach & Moore of Texas, Dallas, electrical; and Sam P. Wallace, Dallas, mechanical.

On the Utilities Building they are:

J. E. Morgan & Sons, Dallas, general; Fischbach & Moore, electrical; and Kieffer Plumbing & Heating Co., Dallas, mechanical.

Contracts for the Braniff Building were awarded to:

Robert E. McKee, general; Sam P. Wallace, mechanical; Superior Electric Co., Dallas, electrical.

Whittle Construction Co, Dallas, constructed the horseshoe storm sewers; Texas Bitulithic Company, Dallas, has the site work and sanitary sewers. Street paving is being performed by Uvalde Construction Co., Dallas.

Reinforced concrete lowers costs and provides a distinctive, yet functional design for the new 252-bed Mt. Sinai Hospital in Los Angeles, California. On many other important health centers and hospitals from coast to coast, reinforced concrete is likewise providing better structures for less money. It is a flexible medium, inherently firesafe, and highly resistant to wind, shock, and quake. Furthermore, reinforced concrete saves money by saving erection time . . . work can start sooner because materials and labor are readily available from local sources. On your *next* job, design for reinforced concrete.

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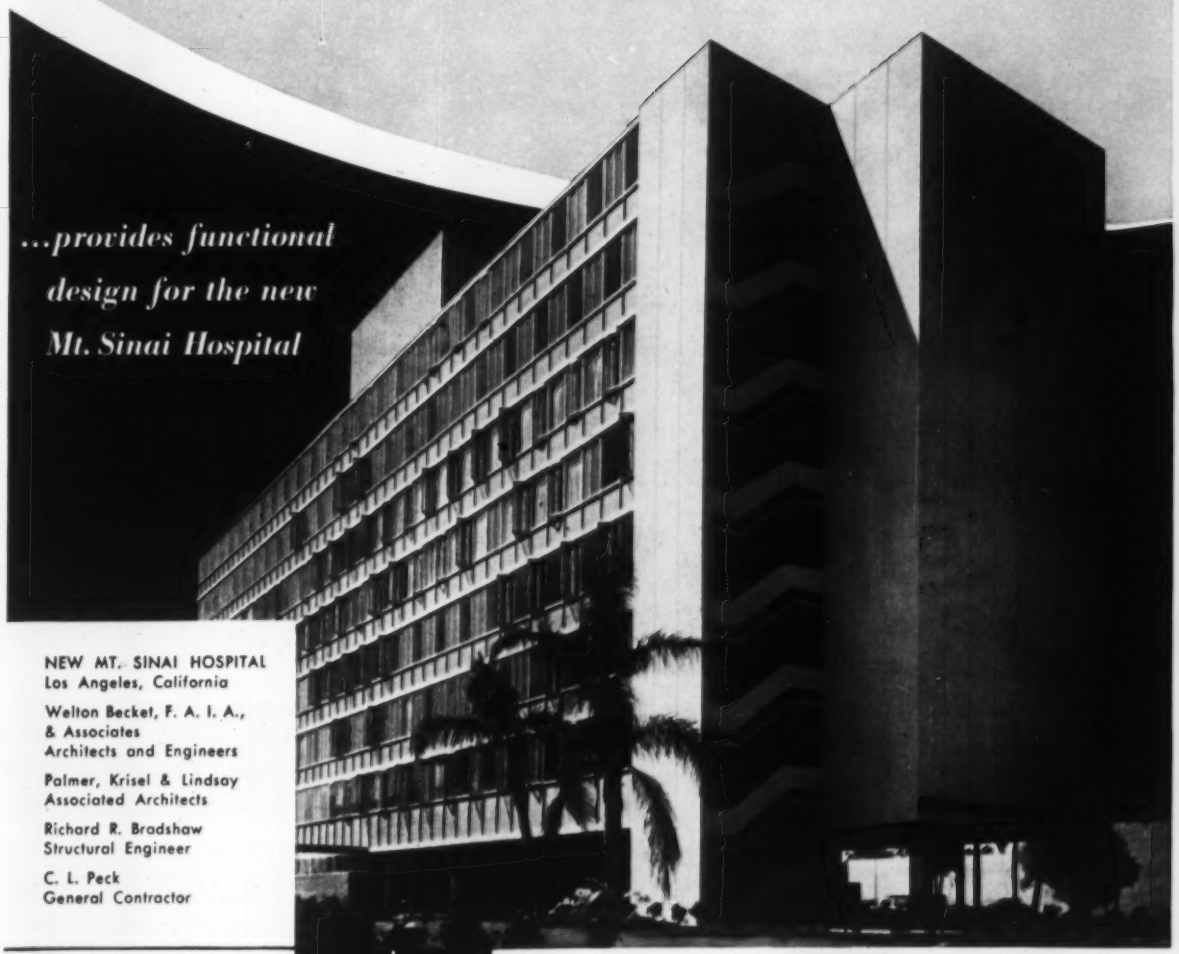
lowers costs



. . . provides functional design for the new Mt. Sinai Hospital

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Los Angeles, California

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HOW A 5-MINUTE WARM-UP

"Slashes our maintenance" says Pasquale Bros., Inc. about the clutch on the Blue Brute Rotary

How can a warm-up save money on compressor maintenance?

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While the engine is idling, warm water from the engine water jacket circulates through heating coils in the compressor oil reservoir. By easing the strain on the engine and pre-heating the compressor oil, the Blue Brute's clutch gives you easier starts, less wear and tear. Result: years of extra life for both engine and compressor.

Here's what Anthony Pasquale of Pasquale Bros., Inc., leading New Jersey blasting contractor has to say about the Blue Brute clutch. "We use plenty of compressed air equipment in our operations and the clutch feature makes a lot of sense to us. In cold weather we would no more start up a Blue Brute Rotary without a warm-up than we would

SAVES HUNDREDS OF DOLLARS

one of our crawlers or big trucks. Based on our experience so far I'd say that this feature alone will save us several hundred dollars on each of our Blue Brute rotaries.

"The clutch," continues Mr. Pasquale, "simplifies our engine maintenance and tuning. It also provides a flexible connection between engine and compressor."

Your nearby Blue Brute distributor will be glad to demonstrate the "rotary with a clutch." He'll also show you other eye-opening compressor features: the Lifetime filter that saves $180 every time you would normally need a change, the unique self-draining cylinders, and the Blue Brute's amazing accessibility.

Blue Brute rotaries are available in 125′, 210′, 315′ and 600′ sizes. For descriptive bulletins on each unit, write to Section H-74, Worthington Corporation, Harrison, N. J. In Canada: Worthington (Canada) 1955, Ltd., Toronto, Ont.

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Tramways feature lightweight catwalk installations for . . .

Spinning Mackinac's Record Cables

Michigan's 70 year old dream of linking its upper and lower peninsulas with a toll bride crossing the Straits of Mackinac is fast becoming a realty. In fact, the 5 mile, $100 million project is scheduled for opening to traffic by Nov. 1 of this year.

The rapid work made of spinning its two 24½-in. dia cables—longest on any bridge yet built—is good assurance that the schedule will be met.

There were many remarkable accomplishments connected with this bold bridge venture, which taxed the resourcefulness of engineers and contractors alike. The construction timetable itself will set a noteworthy record.

The 4 lane bridge is expected to begin carrying toll traffic in less than 40 months from the time the first cubic yard of "pay dirt" was removed from one of the pier excavations on July 24, 1954 (ENR Jan. 27, 1955, p. 35).

It would be difficult to single out any one phase of the project as being outstanding—financing, design, engineering, materials and construction were all accomplishments of high order.

Calendar milestones highlighted:

1953, the year of financing and design;

1954, underwater construction of anchorages, cable bents and main piers for the suspension spans;

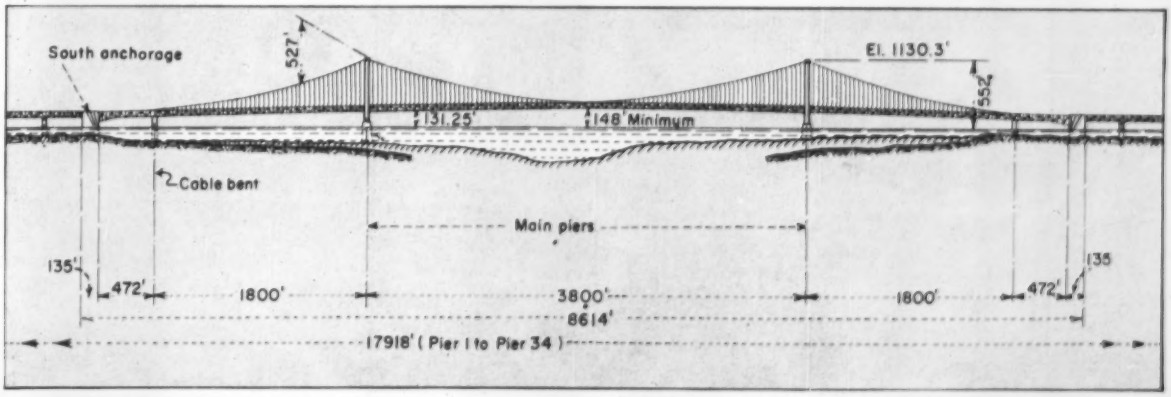
1955, completion of the substructure including approach piers, and erection of the two main towers.

Last year was devoted largely to cable spinning and erection of the approach spans.

Major work to be done this year includes erection of the suspended truss spans and completion of the roadway deck.

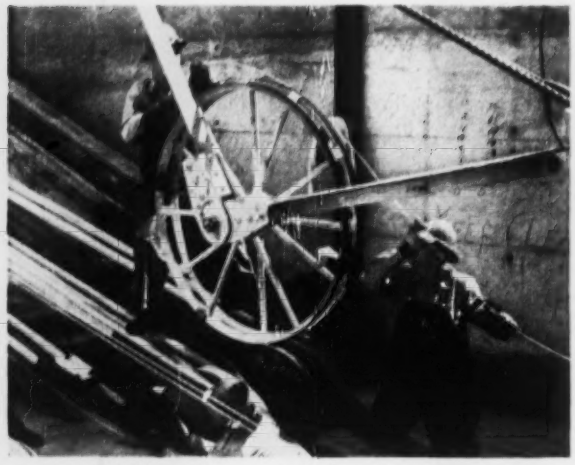
Although Mackinac's 3,800 ft center span is 400 ft shorter than that of the Golden Gate bridge at San Francisco completed in 1937, it measures 8,344 ft between anchorages, compared with 6,450 ft for the Golden Gate and 4,760 for New York's George Washington Bridge, completed in 1931.

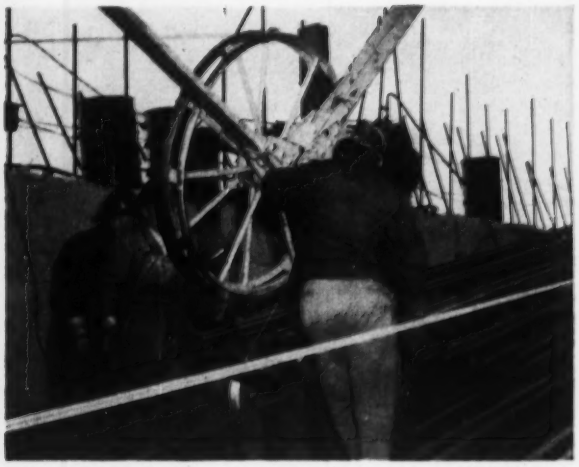
Major preparations for spinning the



FINISHED—Only 78 two-shift working days were needed to spin the two 24½-in. dia suspension cables, each of which contains 12,580 galvanized wires totaling 20,600 miles in length.

. . . Spinning Mackinac's cables: The reeling plant sets the pace





TWIN LOOPS of wire were transferred from spinning wheel to cable-strand shoes of eyebars embedded in the concrete (at left) then, loaded with two new wires, the double grooved wheel started on its return trip to the other anchorage (at right).

two main cables—24½ in. dia and 68 ft apart c-c—included erecting a catwalk with overhead tramway for each cable, and setting up a wire-reeling plant at Sault Ste. Marie, ("the Soo") 50 miles north of the bridge site.

• **Catwalks 9 ft wide**—Erection of the catwalks was started during the latter part of last May and completed on June 19.

They were 9 ft wide, with a floor of 2 in. mesh wire fencing supported on 6x8 in. cross timbers spaced 10 ft apart. The timbers were clamped to five 2¼ in. wire ropes extending over a total horizontal distance of about 8,400 ft. between anchorages. Eventually they will be used as suspender ropes for the suspended spans.

Each catwalk was protected with wire rope handrails, cleats on the steeper sections and metal hardware cloth at the cable-adjusting stations. Electric power and telephone lines for illumination and communications, were strung along the timber handrail posts.

The 10 catwalk-supporting ropes were cut into a total of 50 lengths, unreeled under water and hoisted into position by derricks atop the anchorages, cable bents and main towers.

Sections of catwalk 100 ft long were assembled in accordion-like bundles, hoisted to the top of the towers or bents, and slid into place along the supporting ropes.

The walks were then braced with a system of storm cables and cross bridges, ready to receive the tramway systems for the spinning equipment.

The tramway systems—supporting the endless ropes which shuttled the spinning wheels back and forth between the anchorages—were considerably lighter in weight than the old-fashioned gallows once used in spinning cables for big suspension bridges. They consisted of tubular steel gallows, or gantrys, at 100 ft intervals, supported by two 1 in. dia galvanized wire ropes. Eventually the ropes become the handrails on the bridge cables for the use of the maintenance men.

• **Spun in 78 days**—Cable-spinning was a challenging, precision operation requiring the coordinated talents of 150 workmen for each shift. The 10,980 tons of 0.196 in. dia galvanized steel wire in the two cables were spun in 78 working days of two shifts each. Spinning was started on July 18 and completed by Oct. 19 of last year, at an average rate of 140 tons of wire per working day.

Each cable contains 37 strands of 340 wires each or a total of 12,580 individual wires. There is also a 38th tie-back or stiffening strand of 340 wires extending from anchorages to cable bents, for each cable.

• **Reeling plant**—Keystone of cable-spinning progress was actually the reeling plant at the Soo.

It set the tempo of the work, since the reeling crews had to work three shifts per day to supply wire for the spinning crews working two shifts. The plant contained four 150x80 ft buildings providing a total of 50,000 sq ft of storage and working area.

Galvanized wire for the cables was shipped by rail from the American Steel and Wire Division's plant at Trenton, N. J., in coils weighing 350-lb to 550 lb each. A total of 41,204 miles of the 0.196 in. dia wire weighing 0.10 lb per lin ft was required for the two cables. The coils of wire were spliced together and spooled onto 2½ ton supply reels, each of which held 16 tons of wire for a total length of 320,000 lin ft.

The loaded reels were shipped in low-side gondolas to a transfer dock at St. Ignace, barged out to the anchorages and hoisted into spinning machines located 70 ft above lake level. Each machine held 8 reels. Four spare reels also could be stored on each anchorage.

• **Spinning details**—The wires for each of the main cables of the Mackinac Bridge were spun—or more exactly, laid—by two wheels on the endless hauling rope of the tramway system. They were spaced so that as one wheel arrived at one anchorage, the other was arriving at the opposite anchorage.

In a single pass, each double-grooved spinning wheel laid down four parallel wires.

As the wheel passed from one anchorage to the other the two bottom or "dead" wires were incorporated in the strand being formed while the two top wires were carried across the bridge as live wires.

They, in turn, became dead wires on the return trip of the wheel.

Workmen stationed along the catwalk pulled the dead wires down and placed them under hooks, as the wheel passed by. The live wires traveling about 700 fpm also were pulled down with a wooden handle hook and placed under sheaves that were anchored along the catwalk.

When the wheel reached either anchorage the two loops of wire were removed one at a time and placed around a strand shoe in the end of an adjustable eyebar link anchored to the concrete anchorage.

• **Controlled tension**—A system of counterweights kept the wires under tension while they were being spun. This was controlled by a manual brake on the supply reel feeding wire to the

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J. F. White Contracting Co., Cambridge, lays 60″ pipe without a hitch for the Cochituate Aqueduct at Framingham-Natick, Mass. A Moretrench Wellpoint System keeps the job going smoothly "in the dry".

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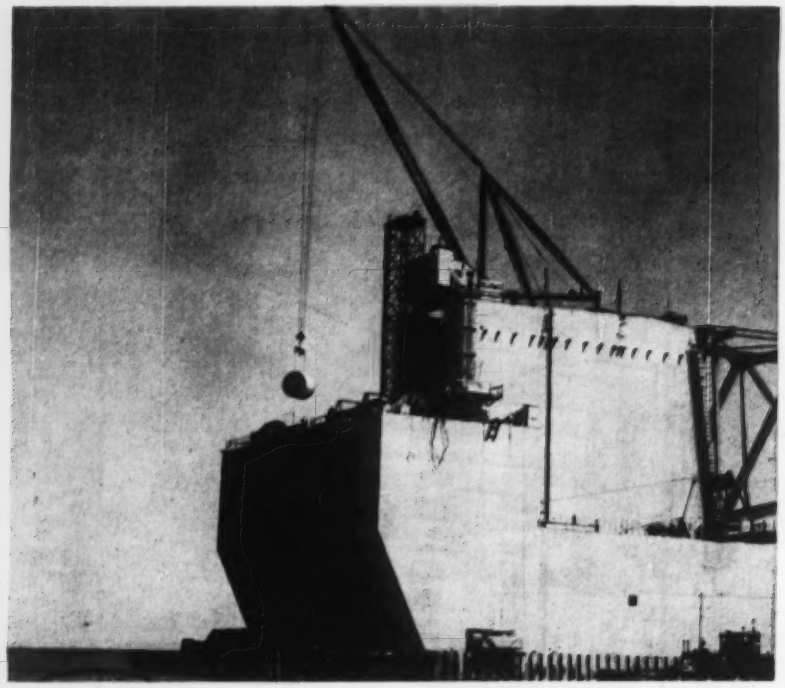
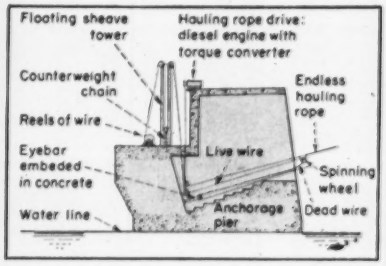
. . . Mackinac's cables: Spin, adjust then spin again—for 78 days





SUPPLY REELS holding 16 tons of wire each were hoisted from barge by derrick atop concrete anchorage (at left) and placed in spinning machine that fed the wire through counterweighted floating sheaves to spinning wheel (at right).

spinning wheel, together with a heavy chain attached to one of the sheaves in the counterweight tower.

The farther the wheel went up in the air, the more chain it lifted, and the more tension was put in the four wires being spun.

As the individual wires were added to a strand being formed each wire was adjusted as to sag throughout the two 472 ft backstay spans, the two 1,800 ft side spans and the 3,800 ft central span.

Workmen stationed at the midpoints of the five spans watched the wire being pulled until it reached a predetermined, marked point on a template—indicating it had the correct configuration and matching a "guide" wire previously adjusted to the proper sag with surveying instruments.

As soon as a spinning wheel left one anchorage and passed over the first cable bent, the 472 ft lengths of the two dead wires just laid, were adjusted to the proper configuration by an electric driven winch located on the anchorage.

This adjustment continued across the bridge to the other anchorage. Operations were then reversed and the two companion "live wires," which had become dead, were adjusted back to the first anchorage.

Four strands were spun in one continuous operation, with each wheel working on alternate strands to give the adjusting crews sufficient time to perform their operations. It took about 15 minutes for a spinning wheel to travel from anchorage to anchorage.

• **Adjusted strands at night**—Normal procedure was to spin four strands then adjust them to the correct configuration while spinning operations were transferred to the other cable. The strands were adjusted by hydraulic jacks at the anchorages, with the eyebar anchors being adjusted accordingly. This operation was performed at night when the temperature of the strands was more uniform.

The wires were spliced during both reeling and spinning operations with a self-locking device.

It was a sleeve coupling about 2 in. long threaded with female right-hand and left-hand threads to receive matching threaded ends of the wires being spliced.

A splice was considered perfect when the threaded ends of the two wires met in the exact center of the coupling. This was evidenced by one and one-half turns of a thread being visible at each end of the coupling.

• **Crew and pay**—Under normal conditions, spinning operations were on a two-shift basis—from 8 am to 4 pm and from 4 pm to midnight. The 150 man spinning crew on each shift included only those working on the bridge at both anchorages and on the suspended span.

It did not include those engaged in reeling operations or in transporting the supply reels from the reeling plant to the anchorages.

The workmen drew 68 hours pay for an average week's work.

For each of the first five days of the week they were paid for 7½ hours of work plus ½ hour differential and 2 hours portal-to-portal pay, totaling 10 hours. Saturday was premium pay: 7½ hours work and ½ hour differential, at double time, plus 2 hours portal-to-portal totaled 18 hours for the day and 68 hours for the week.

At an hourly rate of about $3.50, bridgemen in the top classification earned nearly $1,000 per month.

• **Compacting the cables**—After the cables had been spun they were compacted, or squeezed into a 24½ in. dia circular cross section and secured with temporary steel bands. Eight compactors were used, each containing six 75 ton hydraulic jacks pressing on shoes made to fit the curvature of the finished cables.

They were moved along the cables and compressed them at 3 ft intervals.

The permanent cable bands to which the suspender ropes will be attached were also put in place. The catwalks were hung from the main cables and the catwalk ropes were removed. They were shipped back to the wire mill to be stretched, marked, cut and socketed to become suspenders for the stiffening trusses.

The St. Ignace approach to the 8,614

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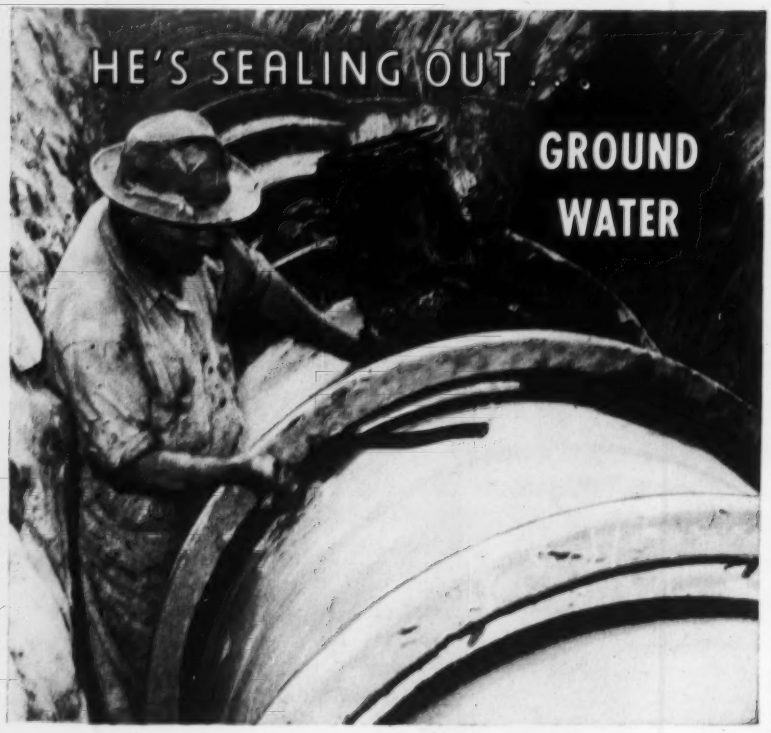

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. . . Mackinac's cables

COMPACTING MACHINES, equipped with six 75 ton hydraulic jacks squeezed the cables into circular cross sections of 24½ in. dia, and temporary steel bands were added. The cables will be red-leaded and wrapped later.

ft of suspension bridge contains 12 deck truss spans totaling 3,610 ft in length.

All but one of the spans have been erected and the concrete decks have been placed on six spans. Of the 16 deck truss spans totaling 5,694 ft in the Mackinaw City approach, only one remains to be erected, while concrete decks have been placed on 10 spans.

• **Men in charge**—Dan C. Kline is project manager on the $45 million superstructure contract held by the American Bridge Division, U. S. Steel Corp., reporting to A. A. Porter, vice president, erecting.

Construction superintendents include:

C. N. Haney, wire-reeling; A. B. Drilling, cable erection; V. A. Vogel, approach spans; and Fred Robinson, main towers.

John W. Kinney is resident engineer for D. B. Steinman, consulting engineer and designer of the bridge. W. F. Fry and Gordon Dallas are assistant resident engineers, and Russell Garrard is office engineer.

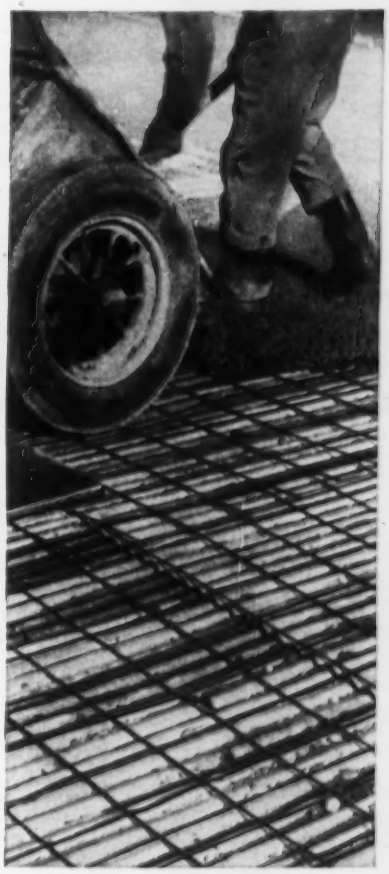
Prentiss H. Brown is chairman of the Mackinac Bridge Authority, and Lawrence A. Rubin, is executive secretary.

Merritt-Chapman & Scott Corp. built the substructure under a $26 million contract.

A $2.2 million contract for constructing the concrete and asphalt bridge deck was awarded to Louis Garavaglia and Johnson-Greene Co., joint venturers.

EASY TO HANDLE. Light Corruform sheets span up to 30", are quickly welded or clipped to steel joists, can be easily cut to fit openings.

ROLL OUT MESH. Corruform in place offers an immediate, safe work platform, withstands normal construction abuse, adds stiffening to joists.



FAST CONCRETING. Rigid Corruform sheets permit slab to be cast and finished in one operation. The finished slab is ready for floor covering.

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Secure Corruform® to joists . . . roll out mesh . . . place concrete. That's all there is to it! Corruform corrugated steel base makes cast-in-place floor slabs strong, safe, easy to erect because Corruform sheets are light yet nearly *twice as strong* as ordinary steel of comparable weight. The minute Corruform is down, you can walk on it, work on it. Rigid sheets resist dents and punctures, distribute loads, eliminate pull on joists, provide a tight, solid base for concrete. And because Corruform is 100,000 psi steel, it carries concrete over joists without sag, stretch, bend or leakage. Sheets retain cement paste, speed finishing, assure true and level finish. Corruform has been used extensively throughout the U. S. on almost every type of building. Stocks available from coast to coast. Get more information by writing Granco home or district office. ATTN.: Dept. E-71.

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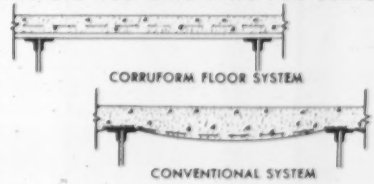

Diagram shows how Corruform stays level, saves about 20% or more in concrete over "flexible type" centering.

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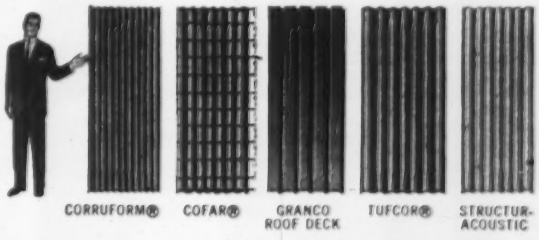
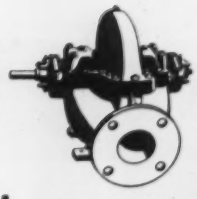


Look!



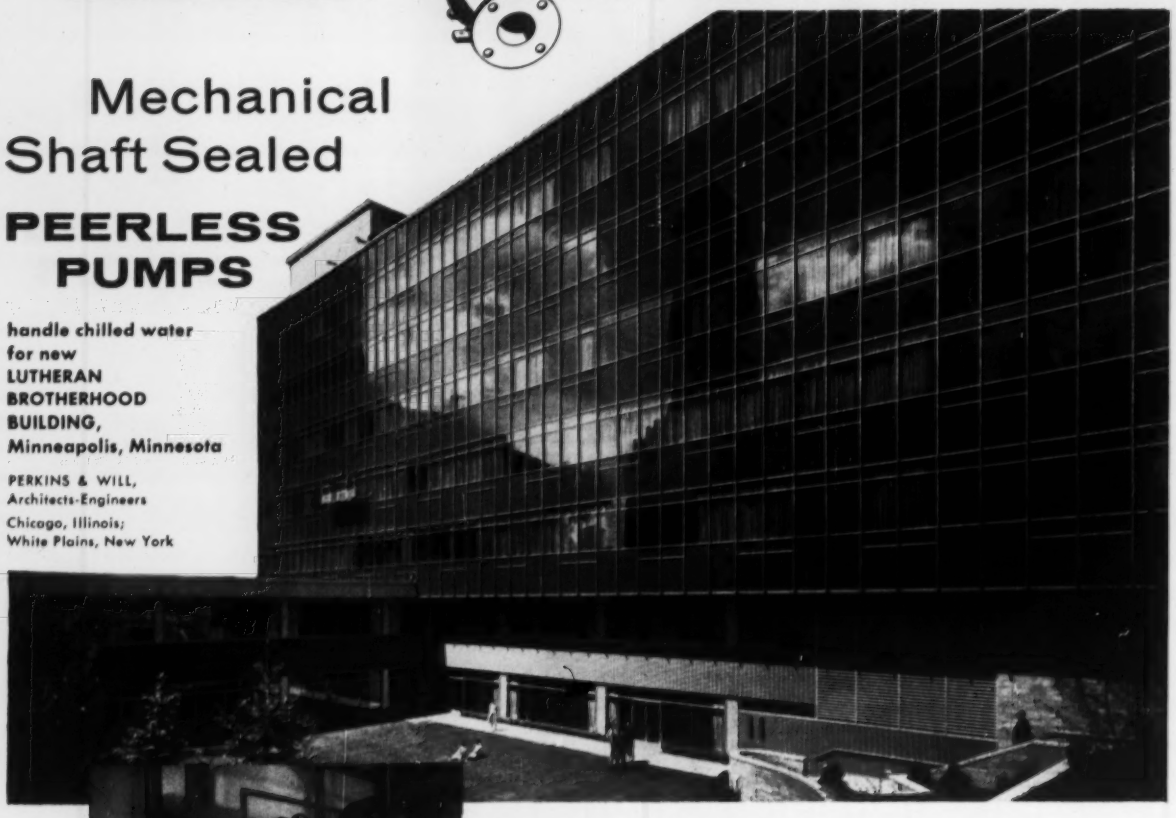
NO STUFFING BOXES

Mechanical Shaft Sealed

PEERLESS PUMPS

handle chilled water for new LUTHERAN BROTHERHOOD BUILDING, Minneapolis, Minnesota

PERKINS & WILL, Architects-Engineers
Chicago, Illinois; White Plains, New York



BUILDING AIR CONDITIONERS are served by these 3 chilled water pumps. Because they employ mechanical shaft seals, there is no messy leakage. Occupy ½ the usual space, too. Truly modern pumps for a modern building.

MODERN PUMP CONSTRUCTION for A MODERN BUILDING . . .

Modern Peerless Type AS pumps, designed for and with mechanical shaft seals, instead of a stuffing box usually associated with this type of horizontal split case pump, are the choice of the architects-engineers for this most modern of air conditioned buildings.

Here are a few of the features that Type AS Peerless pumps offer: short shaft reduces shaft deflection, increases pump life; mechanical shaft seal eliminates leaks; pump is about ½ as wide as conventional pumps, size for size; pump performance is several points higher in efficiency; and finally, pump is easily serviced because rotating element lifts out of case in one piece for easy inspection and maintenance.

Figure your next job around Peerless Type AS pumps; gain the space saving, maintenance saving advantages of these modern shaft-sealed pumps for all water handling installations.

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
301 WEST AVENUE 26, LOS ANGELES 31, CALIFORNIA

PEERLESS PUMPS fmc

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Distributors in Principal Cities. Consult your Telephone Directory.

☐ *Please send me a Peerless Type AS pump Bulletin No. B-1350.*

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TITLE _____ COMPANY _____

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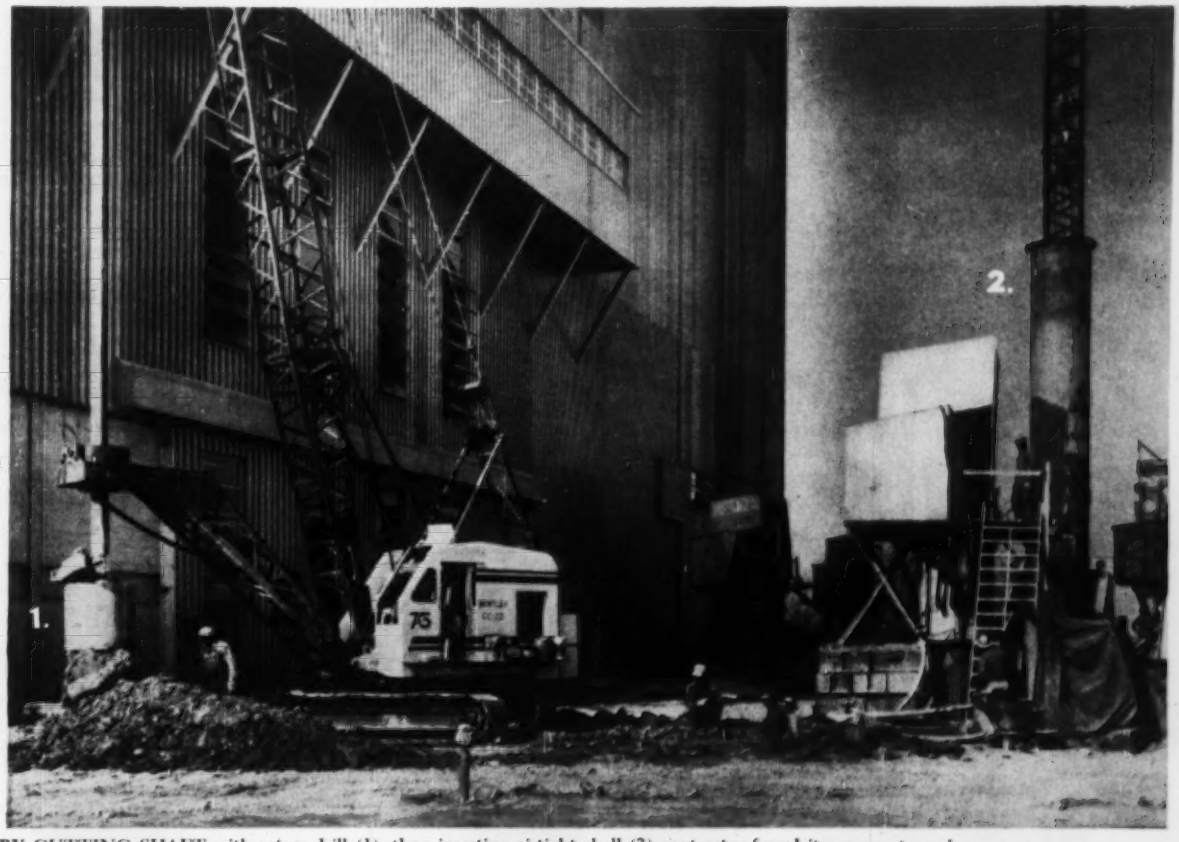
ENR



BY CUTTING SHAFT with rotary drill (1), then inserting airtight shell (2) contractor found it can pay to make . . .

Open Caissons Go Under Air at 85 Feet

A. L. Bentley, Jr.
Foundation Engineer
A. Bentley & Sons Company

Foundation work for the second unit of The Toledo Edison Company's Bay Shore Station has produced a workable combination of methods for the installation of bell and shaft type caissons.

The foundation consists of 51 caissons carried to hardpan, which lies at an average depth of 105 ft below grade, and 28 additional caissons carried to stiff clay 67 ft below grade.

The deeper caissons support the major loads of the building. Excavation presented several problems, borings indicated an artesian flow of water with a maximum head of 77 ft at the elevation of the deepest possible bell; the loss of ground during excavation had to be kept at the absolute minimum, because of the proximity of existing structures.

The use of compressed air was indicated as a solution. But compressed air excavation, particularly at an equivalent head of 77 ft, is a laborious and time-consuming process. Some way had to be developed to reduce the cost.

Cooperation between the construction engineers of The Toledo Edison Company and those of The A. Bentley & Sons Co of Toledo, foundation and general contractor for the project, produced this plan:

1. Excavate 85 ft of the shaft in the dry and without air by dry rotary methods.
2. Line the first 85 ft with an airtight drop-in steel shell.
3. Set the air lock at grade on top of the shell and pressurize the shaft.
4. Excavate and concrete the bell under air.
5. Remove the shell and concrete the shaft without air, after the bell concrete has set.

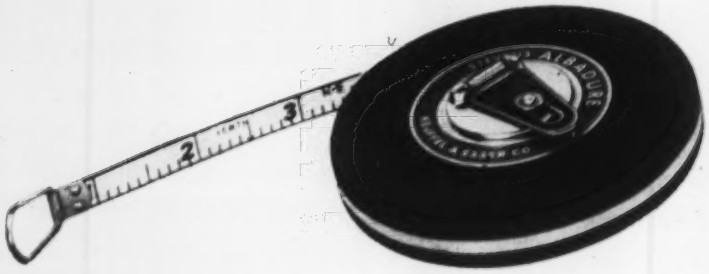
Elements of this procedure have been used over a period of years in the Great Lakes area where the peculiar soil conditions make it feasible. For example, the foundations for the main post office building in Detroit were installed by drilling caissons in the dry—but without air—to depths of 118 ft (ENR 1932, Vol. 2 p. 105).

• **Conditions favor method**—The dry rotary excavation of these caisson shafts was possible since the difficulties caused by excessive artesian seepage in the 100 ft of clay overburden do not occur at depths less than 90 ft. The shaft is unlined during the drilling operation and the 85 ft airtight steel shell, 5 ft 6 in. in diameter is afterwards placed in one piece. The shaft is drilled slightly larger than the outside diameter of the shell to facilitate installation.

Boulders present a problem to any contractor engaged in foundation work. Although in large diameter drill shafts, boulders of moderate size are easily handled. The overburden at the job-site consists of typical glacial boulder clay and the dry rotary excavation method presents a far more effective solution for the handling of boulders than wet methods. In using the dry method an appreciable advantage was gained since the mechanical portion of the shaft and bell excavation of the caissons accounts for 60 to 70% of the total required excavation.

Stability analysis of the 5 ft 6 in. diameter 85 ft shaft does not yield excessive lateral squeezing pressures which

ALBADURE*... the steel tape with lasting legibility



Here is a steel tape that stays clear and legible long after markings on other tapes have worn off.

An amazingly tough plastic coating on both sides of the line protects the white background, the graduations and numbers on ALBADURE tapes, giving their surfaces tremendous resistance to abrasion and corrosion. To quote a State surveying party report, "If ALBADURE stood up in this tough mud and sand, it'll stand up anywhere." Available in all standard lengths, widths and graduations, in cases and on reels.

PHOENIX WYTEFACE®... the woven tape that outlasts others 3-1

PHOENIX WYTEFACE (non-metallic) Woven Tapes made from extra strong synthetic yarns, are harder wearing, with higher tensile strength and dimensional stability than ordinary woven tapes. A special plastic coating on both sides protects the line against hard use, water, stones or brush.

The end of the line is enormously strengthened by a lamination of Flexi-Foam, a spongy plastic-rubber. No stitches or hinge point to weaken the line.

A Highway Engineer reported of the non-metallic PHOENIX WYTEFACE, "It has at least three times the life of an ordinary metallic tape." *Ask Your K & E Dealer!*

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89 YEARS OF LEADERSHIP In equipment and materials for drafting, surveying, reproduction and optical tooling . . . in slide rules and measuring tapes.

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would predicate loss of ground hence, for the comparatively short time the shaft is open, the potential loss of ground above the 75 ft level is relatively nil.

The design of the drop-in shells presents a classic problem in the elastic stability of long cylindrical shells. The greatest demand on the casing is produced by the unrelieved lateral thrust of mud and water which collects in the annular space between the outside of the shell and the walls of the drilled shaft.

The thickness of shell and any interior stiffener must be proportioned to meet this requirement.

Airtight access doors in the side of the shell permit the direct introduction of concrete into the shaft from ready mix trucks.

A system of filler plates in the bottom fifteen feet of the unit permit air extrusion of the concrete in such a manner as to fill all the irregularities of the drilled shaft and thereby insure a full cross section of concrete in the completed caisson.

Compressed air work is being carried on at an average pressure of approximately 30 psi.

The air locks are of the Moran type with a wedge-type stuffing box which permits the load cable for the muck bucket to pass the closed outer door.

The shaft excavation below 85 ft is lined with standard steel liner plates which are back packed with mud to retain the compressed air.

The excavation of the bell follows a normal pattern made possible by the control of artesian water by compressed air pressure.

The muck is emptied next to the lock and is then loaded into trucks for removal from the site.

The cast iron weights supply enough dead weight to bed the air seal gasket between the lock and the drop-in shell to insure a safe connection. The potential loss of ground during the excavation of the bells has been nullified by the use of compressed air.

By means of a special adapter the bells are concreted under air through the air lock. The pressure in the shaft is maintained until the bell concrete has attained a reasonable set, then the air lock is removed to permit the concreting of the remainder of the shaft to grade.

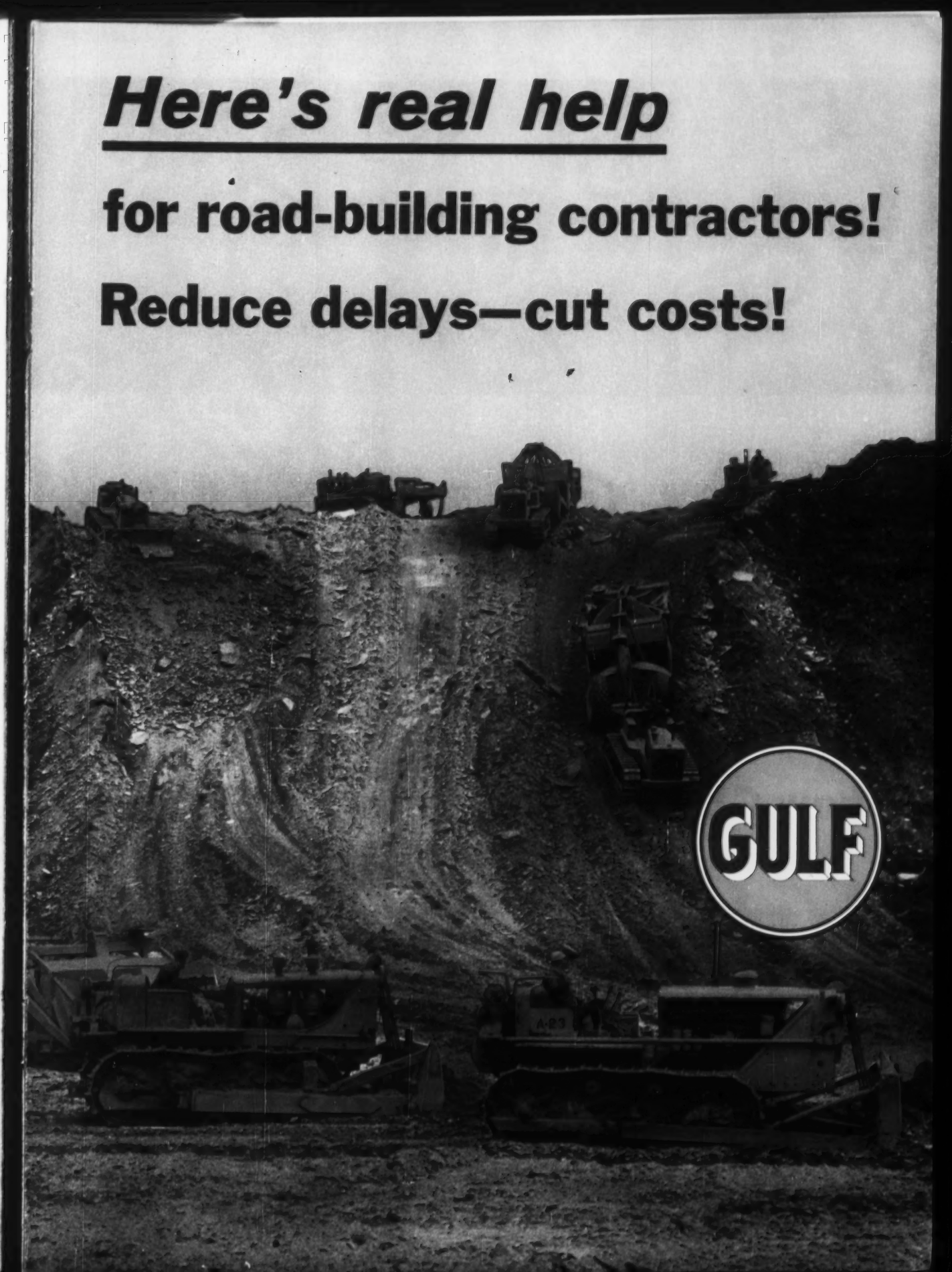
The foundation project was started in May of this year and should be complete about the first of next year. The Toledo Edison Engineers in charge of the project are Mr. P. R. Knapp, Vice president in Charge of Production, and Mr. Neil Wadsworth, Chief Construction Engineer.

G. W. Saathoff is Design Consultant for Edison and Harry White is job superintendent for Bentley and Bruere.

Here's real help

for road-building contractors!

Reduce delays—cut costs!



Construction in progress on 10 miles of the new Massachusetts Toll Highway—in Palmer Chicopee and North Wilbraham, Mass. The Palmer section requires excavation of 2 million yards of earth and 650 thousand yards of rock. Grandview Construction Corp. of Mt. Vernon, N.Y., contractors for this section, used Gulf petroleum products exclusively on the job.

how GULF keeps equipment rolling

On the Ohio Turnpike, Gulf was the supplier on 18 of the 45 contracts representing nearly $81 million out of the total cost of $193 million. Photo shows section under construction between Strongsville and Olmsted Falls, Ohio, where more than a million cubic yards of dirt had to be moved. Typical of Gulf service was delivery of 68,000 gallons of diesel fuel in a 20-day period to one 5000-gallon underground storage tank for Peter Kiewit Sons' Company and Condon-Cunningham Company.

Shown under construction here is the only tunnel on the West Virginia Turnpike—a 2-lane tunnel, 2665 feet long with a finished diameter of 36 feet. Work on this part of the job required 25,000 cubic yards of open cut excavation, 91,800 cubic yards of tunnel excavation, and 20,800 cubic yards of concrete tunnel lining. Bates & Rogers Construction Corporation of Chicago, Illinois, used Gulf petroleum products exclusively.

on major highway projects

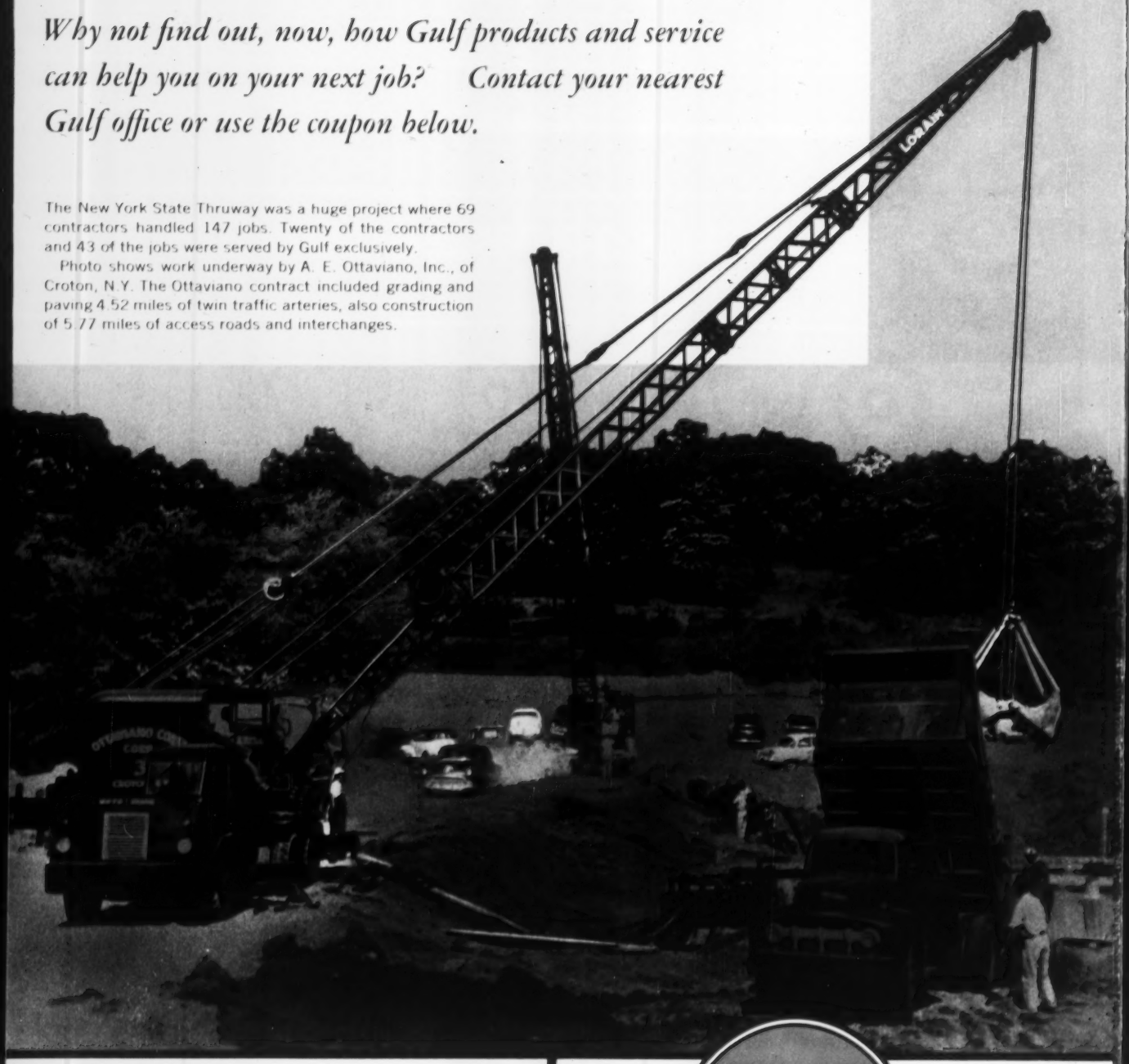
It's not just coincidence that from Maine to New Mexico . . . from the Atlantic Ocean to the Rockies . . . more and more contractors are relying on Gulf petroleum products. That's because:

- Dealing with Gulf, you're sure of prompt delivery. When your equipment arrives at the job, Gulf will be waiting, ready to deliver fuels and lubricants. As long as the job lasts, Gulf will supply you from a nearby bulk plant. Gulf has 1500 strategically located warehouses, so you're sure of an uninterrupted supply of petroleum products—on time!
- Gulf Petro-engineering Service is provided to you on the job . . . to make sure that you're using the most economical and efficient petroleum products for every unit of your equipment. Thirteen hundred Gulf scientists and engineers stand behind your Gulf Sales Engineer to provide technical advice whenever you need it.
- Gulf fuels insure top engine performance. They burn clean and deliver full power.
- Gulf lubricants provide an extra margin of protection to every moving part. With these quality lubricants you'll have fewer mechanical delays, lower maintenance costs and a smoother-running job.

Why not find out, now, how Gulf products and service can help you on your next job? Contact your nearest Gulf office or use the coupon below.

The New York State Thruway was a huge project where 69 contractors handled 147 jobs. Twenty of the contractors and 43 of the jobs were served by Gulf exclusively.

Photo shows work underway by A. E. Ottaviano, Inc., of Croton, N.Y. The Ottaviano contract included grading and paving 4.52 miles of twin traffic arteries, also construction of 5.77 miles of access roads and interchanges.



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Italian Periscope Level Is a Compact Instrument

The Italian-made periscope level, Model 5190, which uses a suspension device for automatic fine-leveling (ENR Mar. 7, p. 72), is a clean compact instrument on the job.

Without moving his sight from the telescope field, the viewer also can check micrometer readings for fractions of rod intervals to 1/50 mm or 1/10,000 ft and can check for correct settings. Filotecnia Salmoiraghi, Inc., 41-14 24th St., Long Island City, N. Y.

Automatic System Controls Demineralizing Equipment

Development of a signaling system providing an alarm and record of the malfunctioning of any component in demineralizing equipment that is intended to operate in accordance with a predetermined program has been announced by Infilco, Inc. Known as the "Robotel" controller, it also provides for automatic shutdown of the programmed operation if desired.

The controller assumes that sooner or later a failure of a component will occur in any automatic control system. Depending on the nature and complexity of the system, such failure may be difficult to locate and correct promptly. With the controller, location of the failure is said to be immediately indicated, alarmed and recorded. Infilco, Inc., P. O. Box 5033, Tucson, Ariz.

Portable Trowel Floats And Finishes Concrete

Small portable power trowels with adjustable blade pitch can float, level and finish concrete in small or confined areas. A stationary guard ring permits working next to columns and walls. Their portability makes them suitable for maintenance and repair work and for the "do-it-yourself" trade.

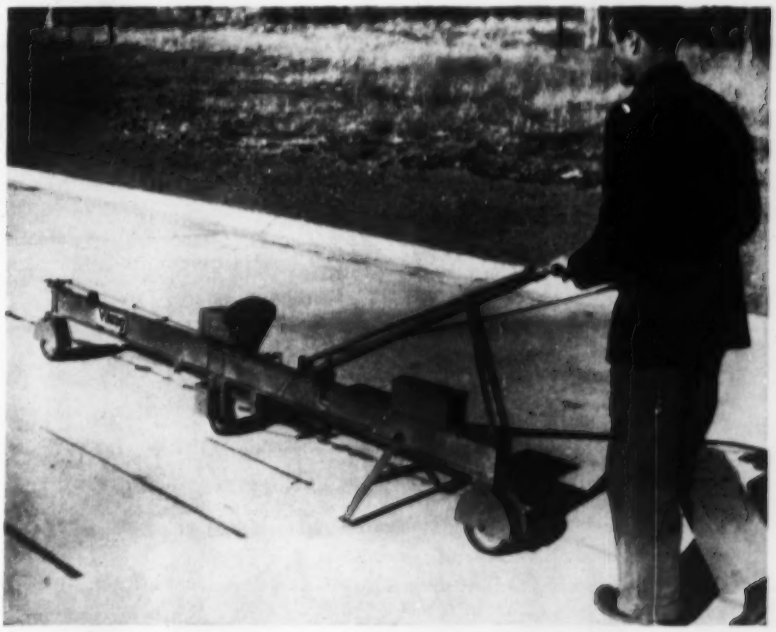
The power trowels are lightweight. The Kelley Bantam weighs 75 lb and has a 24 in. dia trowel. The Kelley Boy weighs 90 lb and is equipped with a 29 in. dia trowel.

It is claimed that their balance and low center of gravity makes operating easy by eliminating pulling, tugging and gyrating. Kelley Machine Division, Wiesner-Rupp Co., 285 Hinman Ave., Buffalo 23, N. Y.

Pump Installation Time Halved by Plastic Pipe

By using lightweight, flexible, corrosion-proof SRK plastic pipe, well drillers can halve the time ordinarily needed to install a submersible pump, according to the manufacturer.

The company's "pre-assembly" method works as follows: 20 ft lengths of the 1 or 1¼ in. dia pipe are laid out end to end, joined by a solvent welding solution, attached to the pump by plas-



Rolling Straightedge Checks Slabs

An easy-rolling straightedge for rapid detection of high or low places on forms and pavement slabs has been developed by Viking Manufacturing Co. The "Hi-lo Detector" dye marks slab areas not within specification.

The detector consists of a 10 ft aluminum beam that rolls on precision ball bearing, aluminum rubber-tired wheels. A center wheel measures up and down variations of the surface. These variations are magnified 20 times on a scale graduated in ¼ in. readings.

The machine is guided by a bar handle and has a steerable front wheel. The dye-marker is controlled with the left handle grip, permitting an inspector to cover and mark a slab at an easy walking pace.

By lowering the wheel guides, the straight edge can be used on forms. An outboard stabilizing leg allows the machine to stand upright unattended.

A special-built frame for storage and transporting keeps wheels suspended so they remain true round without flat spots. A spring-loaded line level is furnished with the machine for accuracy checking and zero setting. A service box contains line, wrenches and dye supply. Viking Manufacturing Co., Manhattan, Kan.

SONOTUBE®

FIBRE FORMS

save time, labor, money!

Providence River Bridge, North-South Freeway, Providence, R. I., Rhode Island Dept. of Public Works, Div. of Roads & Bridges. M. A. Gammino Company, contractors. Charles A. Maguire & Associates, Boston, consulting engineers. Photo: Courtesy New England Construction.

Three-foot diameter

SONOCO SONOTUBE®

formed the piers for this bridge!

The typical river bent for the Providence River Bridge included a concrete girder about 140 feet long supported on eight three-foot diameter round concrete piers formed by low-cost Sonoco SONOTUBE Fibre Forms.

These columns, in turn, are supported by a solid granite-faced pier section resting on a heavy tremie seal foundation and long steel H-piles.

SONOTUBE Fibre Forms save time because they erect quickly . . . save labor because they require minimum bracing and are easy to handle . . . save money because they are economical to use!

See our catalog in Sweet's

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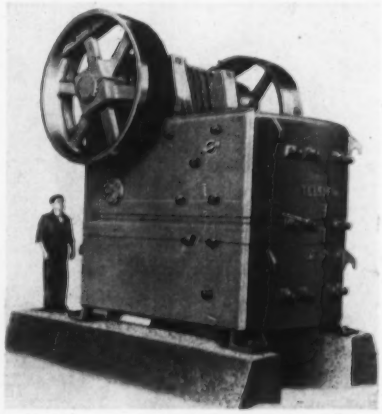
tic fittings and then lowered into the well. No threading or cutting equipment, or tripod supports for the lengthening pipe, are needed.

The 20 ft length of the 1 in. pipe is rated at 150 lb, weighs 2.26 lb and can be bent to a 4 ft radius. Plastic Pipe Division, Republic Steel Corp., Cleveland, Ohio.

Larger Capacity Crusher Cuts Down Quarry Labor

A new and larger size jaw crusher has been designed with a 42 in. x 48 in. opening that will take bigger rock to reduce quarry labor and expense.

A two-piece, double wall, box section welded steel frame and a massive cast steel swinging jaw with extra large cylindrical roller bearings have been used throughout the crusher. Smith Engineering Works, Milwaukee, Wis.



. . . Publications

Crushers—The new Pioneer 44-45 series of portable crushing and screening plants is the subject of two pieces of literature—one containing a large cutaway illustration to show flow of materials, the other listing complete specifications and operating features. PIONEER ENGINEERING DIVISION, 3200 COMO AVE., MINNEAPOLIS 14, MINN.

Cable conduit—A 12 page illustrated brochure describes the features of the Soapstone Oct-O-Duct, 8-sided conduit for power, telephone, street lighting and other circuits, either in encased or unencased installations. The necessary and possible fittings for the pipe also are presented. SOAPSTONE DUCT CO., 3985 BEACH ST., OAKLAND 8, CALIF.

Asbestos-cement pipe—Features, fittings and installation of Keasbey & Mattison asbestos-cement building sewer pipe are included in a four page brochure. KEASBEY & MATTISON CO., AMBLER, PA.

Soil testing—The unconfined compression test for cohesive soils is described in detail in a 56 page manual, which also deals with interpretation, application and limitations of the test data obtained. SOILTEST, INC., 4711 W. NORTH AVE., CHICAGO 39, ILL.

Air Hammers—Full information on the Ramex air hammer, model AR-4, with its precision impact control, is contained in a new catalog. E. V. NIELSEN, INC., 129 BROAD ST., STAMFORD, CONN.

Operator's Guide—A new Traxcavator Operator's Guide has been released by the Caterpillar Tractor Co. to present information on the operation of Traxcavators and the jobs they can do. CATERPILLAR TRACTOR CO., PEORIA, ILL.

Dumpcrete—The pioneer non-agitating concrete truck body has been redesigned to meet contractor demands for greater capacities and flexibility. A new catalog describes how the new body can handle up to 4 cu yd on a single axle truck and up to 6 cu yd mounted on tandem axle trucks. MANUFACTURING DIV., MAXON CONSTRUCTION CO., 2600 FAR HILLS AVE., DAYTON 9, OHIO.

Cylinder insulation—A chart developed by Armstrong aids in estimating the amount of material necessary to insulate cylindrical vessels by converting gallon quantities into square feet of surface area. ARMSTRONG CORK CO., LANCASTER, PA.

SONOTUBE®
FIBRE FORMS
help keep cost down!

Wisner Drive Overpass, New Orleans, La. G. A. Heft & Company, Engineers. Keller Const. Corp., general contractors. Built for City of New Orleans. Photo courtesy Lone Star Cement Corp.

Three-foot diameter

SONOCO SONOTUBE®

formed the piers for this overpass!

At only $8.45 per square foot, the Wisner Overpass was constructed for the lowest unit cost in the entire New Orleans grade separation program!

Hollow concrete piers, formed with 36" I.D. SONOTUBE Fibre Forms and 18.7" O.D. SONOVOID Fibre Tubes, support this 1420-ft. bridge structure. These piers cap underground piles.

Save time, labor and money . . . use low-cost SONOTUBE Fibre Forms for the round columns on your next work . . . order in specified lengths or saw to requirements on the job! Available from 2" to 48" I.D., up to 48' long.

See our catalog in Sweet's

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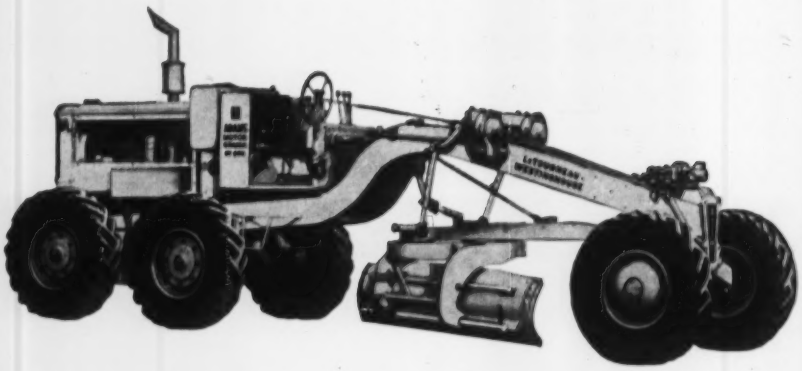
Speed and mobility of big construction



To meet today's growing dirtmoving demands—more and more yards to move, longer hauls, greater variables in job conditions — you will need machines with more power and bigger capacity. You need machines that will work faster, travel faster, and operate at higher mechanical efficiency. Dependable LeTourneau-Westinghouse equipment gives you the balanced combination of power, traction, speed, and rubber-tired mobility to increase pro-

Rear-Dumps — 11, 22, and 35-ton haulers have bodies with triple-layer, all-steel floor . . . haul on-or-off highways at speeds to 34.4 mph. Rigs can turn in space ¾ of their length with dump-body raised. These electric-control units dump clear over bank, pull out safely with front-wheel drive. Interchangeable scrapers, bottom-dumps, side-dumps, and flatbeds also available.

Tournapull-Scrapers — 138, 208, and 293 hp models with heaped capacities to 9, 18, and 27 yds. Scrapers work and travel on-or-off highway at speeds to 29.9 mph. Electric kingpin power-steer turns prime-mover 90° . . . makes 180° turns in area narrower than machine's own length. Power-transfer differential applies up to 80% of power to drive-wheel on firmest footing. All Tournapull prime-movers interchange with rear-dumps, bottom-dumps, side-dumps, and flat-beds. Bulldozer and Snowplow available for D Tournapull.

Adams Graders — Six models, 15,500 to 30,200 lbs.; 60, 80, 104, 123, 150, 190 hp. Standard heavy-duty models have 8 forward speeds to 26 mph, 4 reverse to 13 mph, and 3 optional creeper speeds. Utility grader, 60 hp, travels at 18.3 mph . . . 5 forward, 1 reverse, 4 optional creeper speeds. Torque converter Model "660" available. Snowplow, Wing, V-type Scarifier, Power-shift Moldboard, Bulldozer, Rotary Snowplow, and "Snow-Blo" attachment for optional wing also available for Adams graders.

"Get ahead" with the years-ahead L-W line

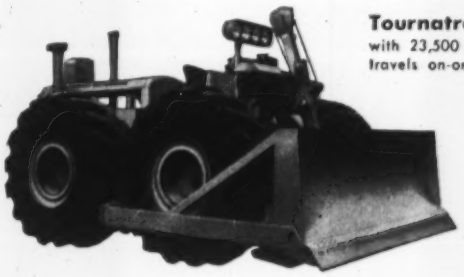
LeTourneau-Westinghouse originated the two-wheel, electrically-controlled, rubber-tired prime-mover . . . and was first to introduce a rubber-tired, electrically-operated heavy-duty tractor. Many thousands of these machines, working in all kinds of conditions in all parts of the world, have established an unequalled record for dependability and low-cost production. So "get ahead" with years-ahead L-W machines, improved constantly for your benefit.

meet challenge program ahead!

duction and *profitably* handle these bigger jobs on schedule.

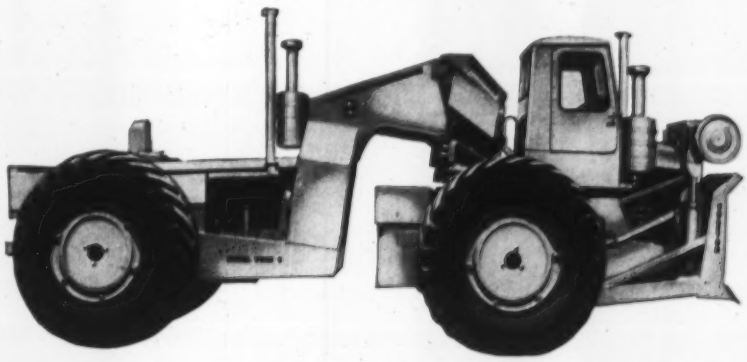
As you equip for the tremendous earthmoving work ahead, carefully study the improved LeTourneau-Westinghouse line that experience built . . . self-propelled scrapers . . . go-anywhere rear-dumps . . . rubber-tired tractors . . . heavy-duty graders. Every one of these modern machines offers you special advantages in speed and mobility that will prove *important* in meeting bigger work areas, higher yardage requirements, shorter time-limits for job-completion, and high wage-levels.

Ask your nearest LeTourneau-Westinghouse Distributor to help you check your present equipment inventory . . . to recommend a planned program of fleet replacement and additions to best meet *your* needs for tomorrow's expanding, building and highway construction programs.



Tournatractors — 208 hp Model "C" with 23,500 lbs. pull at 2 mph . . . works and travels on-or-off roads to 17.4 mph forward, 7.3 mph reverse. Push-plate, Dozer blade, Angledozer, Root rake, V-Snowplow, Snow wing, Winch, Tree Pusher, and Power-Control-Unit also available. Versatile Tournatractor dozes, clears, push-loads, skids, tows, operates electric-control scrapers. With RR coupling at rear, unit becomes *SwitchTractor*. New 208 hp, off-track *SwitchMobile* also available for RR switching.

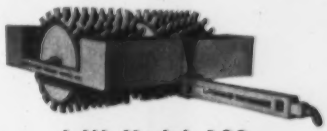
Twin-C Pusher — Giant 416 hp TWIN-C Pusher, with 65,900 lbs. drawbar pull: Loads biggest scrapers easily . . . has geared kingpin power-steering . . . travels at 20 mph forward, reverse to 5.8 mph.



Other L-W tools for bigger production

L-W Model BT TRACTOR-SCRAPER

For use with tractors of 150 hp or more. 18 cu. yds. struck, 27 cu. yds. heaped. Low, wide bowl for easy cutting and fast loading in any scraper material.



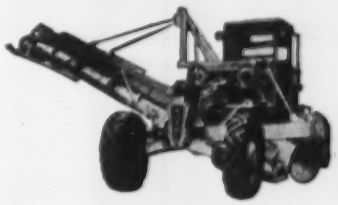
L-W Model 120 SHEEP'S FOOT ROLLER

For use with tractors of 150 hp or more. Two drums, with heavy-duty, dust and water proof bearings; and 120 forged carbon steel feet per drum. Approx. ground pressure, drums loaded with water and boxes loaded with steel ballast, 2400 lbs. per sq. in.

Adams Loaders

TRAVELOADER

Self-propelled, belt-type machine with choice of 55 hp gasoline or 60 hp diesel engine. Picks up and loads snow, and other loose materials into trucks from windrows or stockpiles. Speeds to 26 mph; loads up to 600 yds. per hour.



ELEGRADER

Excavates, elevates dirt up conveyor for casting or loading. Attaches to Adams 440, 550, 610, 660 graders; fits Cat 12.

LeTourneau-Westinghouse also manufactures: Tractor-drawn Scrapers, Power-Control-Units, Rooters, Sheepsfoot Rollers, Jib Cranes, and Tournarope (from ¼" to 1½" dia.).

Tournapull, Tournatractor, Angledozer, Tournarope—Trademark Reg. U.S. Pat. Off. Adams, Rooter, Fullpak, Twin-C SwitchMobile, SwitchTractor—Trademark G-1267-G w

LeTourneau-**WESTINGHOUSE** Company, PEORIA, ILLINOIS

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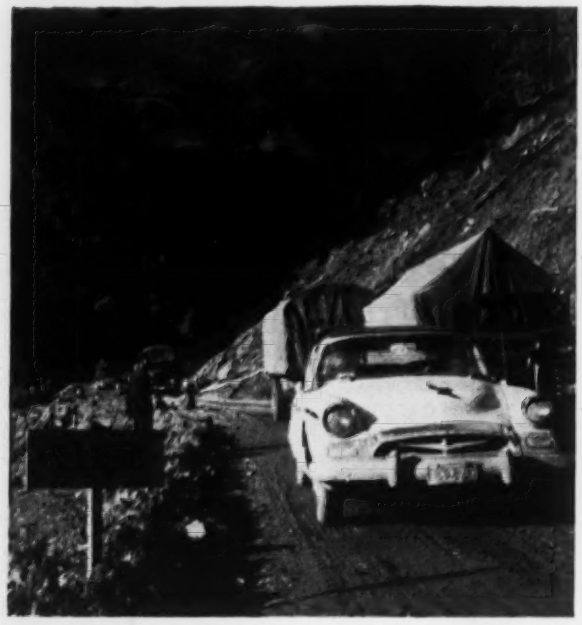
WHERE QUALITY IS A HABIT



DANGEROUS DIRT ROADS on Colombia's inadequate highway system are making way for . . .

NEWER, SAFER, ONES . . . like this finished route near Bogota with marked curves.

Colombia Launches Highway Program

Colombia's economic growth—handicapped for many years by inadequate internal communication systems—is being accelerated now by highway and railroad projects at a cost of nearly $500 million.

Some time during 1958, the 468 mile long Atlantic Railroad—longest stretch built in South America at one time—should be completed at a cost of about $80 million. Construction is progressing northward toward the Caribbean Sea, through the valley of the Magdalena River.

More important is the complex project, expansion of Colombia's highway system to a total length of 6,000 miles at a cost of approximately $400 million.

For each of the next three years, the Ministry of Public Works expects to spend $100 million annually on its roads so that every corner of the country will be linked by an integrated system by 1960.

Construction crews at work for a year, often at altitudes higher than 10,000 ft in the Andes, already have completed many phases. Scores of concrete bridges have been built at strategic points, insuring an unbroken flow of vehicular traffic even during flood season. Most of the main roads have been widened and resurfaced, while new roads are being surveyed and cut through swamps and tropical jungles.

During 1956, Colombia topped all South American countries in road-building expenditures, completing a total of $102 million worth of work.

NEW AND REBUILT highways, coupled with railroad transportation to the coast, will allow Colombia's economy a fuller growth.

Its major north-south highways (old or new) parallel the Andean range and run from the Caribbean coast on the north to the Ecuadorean border on the Pacific to the south. When completed, they will provide the last of the "missing links" in the long-dreamed-of Inter-American highway that will permit U. S. motorists to make the intercontinental motor journey. Venezuela virtually has completed its major contributions to the system. Good roads now extend from the U. S. border through Mexico. Additional segments have been added by Chile, Ecuador and other countries.

• **Industrial progress**—Textiles, pharmaceuticals, footwear, metal and other products coming largely from Colombia's industrial plants in the Cali area are wholly dependent on highway transportation. Petroleum is centered at Barranca Bermeja on the Magdalena River and last year's production of around 44 million bbl is expected to be increased by about 10%. Steel is

(*Continued on page 76*)

What about hydro-flation?

Water or "hydro-inflation" of farm and industrial tractor tires is an old and accepted practice. In the last few years, it has been tried extensively in self-propelled scrapers and big rubber-tired tractors, too. While all the benefits and possible faults are not yet known for dirtmoving uses, certain obvious advantages make it worth your careful consideration.

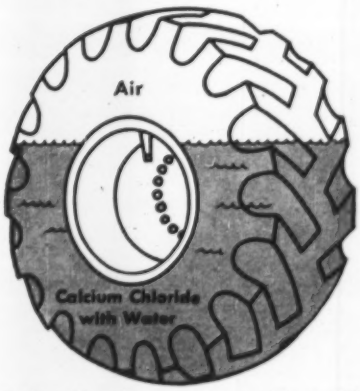
Hydro-flation increases weight of 208 hp, 31,700-lb. Tournatractor by nearly 10%. Increased traction and drawbar pull, plus decreased tire slippage and decreased tire wear are the results.

Measures weight and traction

Biggest advantage is that hydro-flation greatly increases the weight—and the traction—on drive wheels. For example, hydro-flation alone increases the weight of *one* 16-ply 21:00 x 25 tire—1,100 to 1,400 lbs.

If you hydro-flate the 4 tires of a LeTourneau-Westinghouse Tournatractor in this way, you add up to 5,600 pounds to its working weight. Even allowing for greater rolling resistance (due to the added weight), your drawbar pull is increased by 3,100 lbs.

Hydro-flating the drive tires of other earthmoving equipment increases drawbar by similar margins. And, because the solution counterbalances as the wheel rotates, you lose practically no power on the haul. Hydro-flation also cuts slippage and tread wear, and reduces need for frequent re-inflation due to pressure loss.



With valve stem in top position, fill tire with solution up to level of valve stem. Tire will then be filled to within approximately 75% of capacity. Complete inflation to manufacturer's recommended pressure with air.

Calcium chloride prevents freeze-up

The liquid usually used for hydro-flation is either plain water or a mixture of calcium chloride and water. The calcium solution will not freeze, even in sub-zero temperatures, and it will not injure rubber. Five pounds of calcium chloride per each gallon of water protects against freezing in temperatures to 40° below zero.

Simple to do

Hydro-flation is simple. First, thoroughly mix the calcium chloride with water. Follow recommendations of the tire manufacturer—usually three to five pounds of the chemical are added to each gallon of water. Next, jack up wheel of machine to remove all weight from tire. Then, rotate tire until valve stem is at top and perpendicular to ground. Remove as much air as possible. Attach nozzle of hydro-flater to valve stem. Remaining air will escape as solution is pumped in.

When solution reaches valve stem level, remove nozzle and inflate tire with air to manufacturer's recommended pressures. On construction equipment, tires should not be filled with liquid above 75% capacity. Valve should be at highest position when checking air pressure.

One word of caution if you use the recommended calcium chloride solution instead of just water . . . be sure to obtain tubes with special rubber-sealed base valves. This type valve will prevent separation of the rubber valve base and the metal. Special corrosion-proof gauge should be used for checking pressure, too. Equipment for the liquid inflation can be obtained from an agricultural implement dealer or any large tire distributor or dealer.

Tournatractor—Trademark Reg. U.S. Pat. Off.
G-740-OP-bww

Free copies of this article can be obtained by writing LeTourneau-Westinghouse Company, Peoria, Illinois. Please state quantity desired.

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company
WHERE QUALITY IS A HABIT

There is No Worry about Failures or Maintenance Costs with TRU-LAY *PUSH-PULL* Remote Controls

• On Construction Equipment they are being adopted by an ever-increasing number of engineers because they are Rugged, Trouble-Free, Accurate and Adaptable to all sorts of mechanical situations.

Long Life is a matter of record. We have never heard of a TRU-LAY *Flexible* PUSH-PULL CONTROL wearing out in normal service. Failures, that sometimes harass users of more complex controls, are eliminated by the use of these simple, positive-action Push-Pulls.

Dependable Operation of these controls is a certainty, even under the most adverse conditions . . . HOT as jet engines (Note: TRU-LAY PUSH-PULLS are actually performing on hot jet applications) . . . COLD to 70° F. below zero . . . SOAKIN' WET . . . ABRASIVE . . . or just plain TOUGH.

Freedom from Trouble is assured because of such features as . . . full protection of the inner, working member by the tough flexible conduit . . . lubrication of the working member *for life* during assembly . . . seals that keep moisture, dust and other foreign matter out of the unit . . . cold swaging of fittings that makes them integral parts of the control unit.

Accuracy is inherent in the basic design of TRU-LAY PUSH-PULLS. They are precision products, not gadgets.

Capacity ranges from light jobs up to jobs of 1,000 lbs. input. These Push-Pulls will handle jobs 150 feet or more from the control point.

Adaptability to all sorts of mechanical situations explains, in large measure, the use of TRU-LAY PUSH-PULLS on literally hundreds of different machines and equipment. The *flexibility* of these controls makes it possible to provide positive, remote-action whether anchorages are fixed or movable . . . it damps out noise and vibration . . . and reduces the number of working parts.

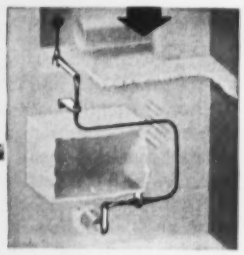
• • •

TRU-LAY PUSH-PULLS are "Solid as a rod but *Flexible* as a wire rope." This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all elements of remote controls.

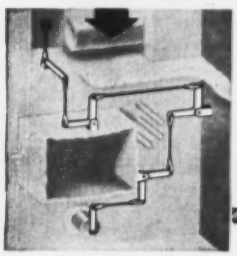
***Advantages** of Tru-Lay Push-Pull flexibility and simplicity are pictured below*

TRU-LAY PUSH-PULL

Simple
One Moving Part
Life-Time Service
Life-Time Accuracy
Low over-all Cost
Noiseless



MECHANICAL LINKAGES



Complex
Many Parts
Many Points of Wear
Increasing Back-Lash
Loss of Accuracy
Vibration
Rattles

Widely Used on Construction Equipment

• These accurate and dependable Remote Controls are used on a wide range of Construction Equipment . . . Tractors and their accessories, Power Shovels, Winches, Graders, Road Oilers, Dump Trucks, Snow Plows, Engine-driven Pumps, Crushers, etc.

On such equipment TRU-LAY PUSH-PULLS are used for the remote control of Transmissions, Hydraulic and Air Valves, Brakes, Clutches, Throttles, Chokes, Governors, Power Take-Offs, and on many other applications.

Our DATA FILE will answer your further questions
Write for a copy, without obligation

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being produced in increasing amounts at the Paz del Rio steel plant.

Some cargo is carried on Mississippi River type stern wheelers in slow journeys to Caribbean points. Completion of the Atlantic Railroad will reduce the time to days instead of weeks.

Completion of the 6,000 mile highway system by 1960 will mean savings in transportation costs with cumulative benefits to the economy as a whole.

Of the total costs of $400 million earmarked for the highways, the Ministry of Public Works is spending around $320 million. The balance is being loaned by the World Bank.

Kenya Plans $700,000 Airport Improvement

The Kenya Ministry of Commerce and Industry plans to spend $700,000 on improving Port Reitz, airport of Mombasa. The plan has been included in the government's development program for the period 1957-1970 and it has been estimated that the work will take 18 months to complete.

Taiwan Prestressed Bridge Will Be 3,400 Feet Long

Nationalist China now is building in Taipei, Taiwan (Formosa) what is believed to be the longest bridge in the Far East. The structure will have an overall length of 3,460 ft, comprising 61 girder spans—five 131 ft, one 98 ft and fifty-five 49 ft spans.

Longer spans will be supported by solid piers on open caissons. Short beams will rest on reinforced concrete bents supported by precast concrete piles. The bridge is designed for H-20 loading. It will have a 48 ft wide deck.

Under construction since last November, the bridge is expected to be open to traffic next January. Total cost will be $1.2 million.

U. S. Pavilion Begun For 1958 Brussels Fair

Construction is now under way on the U.S. Pavilion for the 1958 Brussels World's Fair. It will be completed well ahead of the opening date in April of next year, according to William J. Bierach, of Elizabeth, N. J., newly appointed engineer in charge of construction.

General contractor for the U.S. section of the fair is the Belgian firm of Blaton-Aubert, S. A., of Brussels. The $5 million contract includes construc- of the pavilion itself (a column-free, 2 story circular building 340 ft in diameter) and an adjacent theater, plus landscaping of the 6½ acre site.

Loads truck every 45 seconds... 700 yards per hour

Fast, clean handling of dirt makes every yard cost less. With a fast-loading Elegrader mounted on your larger size Adams grader, you can cut earthmoving costs on jobs where large volume loading, casting, or ditching is required.

Makes your grader a loader

Elegrader cuts ditches and casts plowed material up on the road-bed, into trucks, or over the side bank. It loads fill, strips topsoil, works effectively in clay, loam, sand, gravel, or muck. A heavy-gauge disc-plow is mounted on sturdy plow-beam attached at front of grader. Plow is raised or lowered by power controls from operator's cab . . . digs to 30" depth.

Loads or casts

Excavated material flows from disc-plow onto a trough-belt conveyor . . . travels up and off conveyor at speed of 450′ per minute. You can load up to 700 cubic yards per hour, depending on soil-conditions. 5-yard trucks can be loaded in 30 seconds with a 45-second loading-cycle. When loading a fleet of trucks, the conveyor height is adjusted to load the highest truck, and need not be changed for others.

For jobs such as building up a road grade, or wasting dirt to the side, Elegrader overcasts up to 1500 cu. yards per hour.

26 mph mobility

Your Elegrader, mounted on an Adams grader moves job-to-job at speeds to 26 mph. Conveyors 16′, 19′ or 22′ long are power folded and carried on grader when traveling . . . 27′ conveyor is towed behind grader on its own rubber-tired wheels.

Make cheap dirt pay

Get the facts on Elegrader for fast, clean, big-volume dirt-handling. Find out how a small investment can pay you big dividends. For complete information, just telephone us or drop us a line.

Check these Elegrader features

Troughing belt — 30% more carrying capacity than flat belt; makes steep-angle operation practical.

Hinged conveyor — power-operated folding conveyor; travels safely at traffic speed from job-to-job.

Extended lip and rock-guard — deflects foreign objects from striking belt and conveyor, prevents disc from cutting belt.

Extra-heavy plow-beam — sturdy, stable mount for disc-plow; balances carrier for smooth, easy operation.

Sealed bearings on conveyor-rollers — make lubrication unnecessary for life of bearings.

Belt guide-rollers — center conveyor-belt, reduce wear, cut power-loss, reduce belt-maintenance.

Practical sizes — Available for use on Adams grader models 660, 610, 550, and Cat model 12. Carrier length: 16′, 19′, 22′, 27′. Belt width: 42".

This Elegrader, mounted on Adams 660, cast 1000 yards an hour, rebuilt average of 1 mile of road per 14 hours.

Stripping 18" deep at 2¼ mph, this Elegrader loaded trucks in 30 seconds, averaged 600 yards per hour.

AE-37-H-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT

Total Bacteria Treatment Sought for Sewage Plant

A smaller, more efficient and more economical sewage disposal plant—where total and complete purification would occur by means of self-liquidating bacteria, and thereby eliminating the digestion and sludge handling processes—is being sought at Pennsylvania State University.

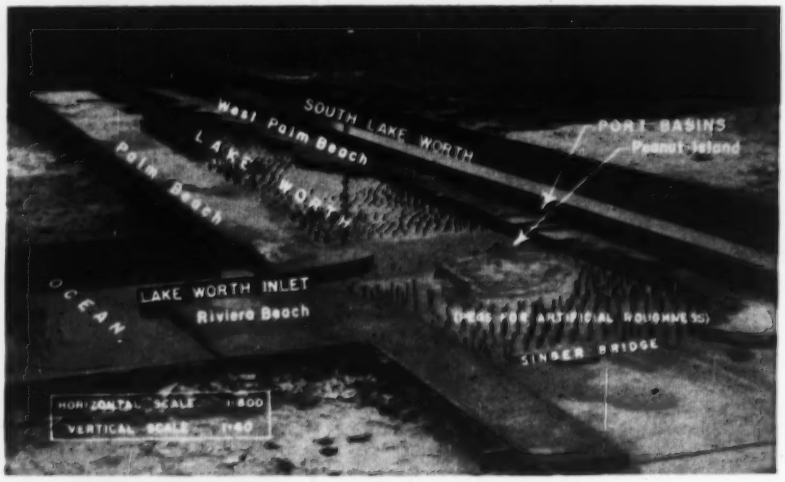
Working on the fact that the entire process of sewage treatment is biological, the research project is aimed at developing a plant that would with maximum efficiency fit the minimum requirements of the sewage-destroying bacteria.

A series of six aerated culture tanks, each holding 60 gal, have been set up along with a pyramidal-shaped separation tank for settling the bacteria from the purified liquid discharge. The feeding (on a sewage equivalent), reproductive and destructive processes by the "cannabalistic" organisms take place and the original number of necessary bacteria remains the same after purification has been accomplished.

The project is headed by R. Rupert Kountz, professor of sanitary engineering, who is working under a two year grant of $21,000 from the U. S. Public Health Service.

Motorboats Used to Chase The Delaware River Tide

Fast motorboats are being used to chase the Delaware River tide to get the facts on the river's sanitary and chemical qualities. The idea is part of the Delaware Water Pollution Commission's pollution study of the river,



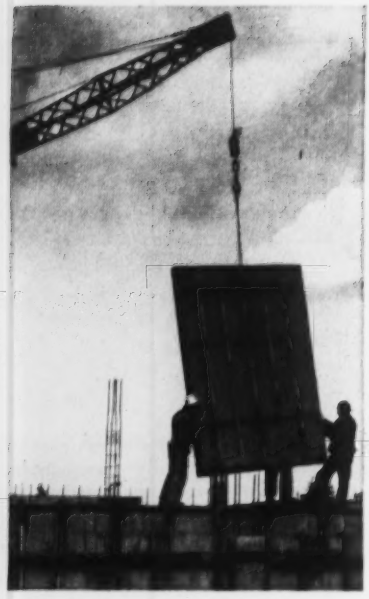
Hydraulic model will predict channel deepening effect . . .

Study Inlet to Tidal Lake

An hydraulic model—to a horizontal scale of 1:800, vertical 1:40—is being used to study changes that would occur in the water table of Lake Worth in Florida should Lake Worth Inlet be deepened from 28 to 35 ft. The study is being carried out by the coastal engineering staff of the Engineering and Industrial Experiment station at the University of Florida.

Lake Worth is a salt-water lagoon that separates the island of Palm Beach from the mainland for a distance of about 20 miles and is connected with the ocean at both ends. Lake Worth Inlet, between Riviera Beach and West Palm Beach, is the entrance to the Port of Palm Beach.

Tidal information obtained by recorders installed at different points in Lake Worth is reproduced to scale in the model. A gate regulates the water supply brought to the model by a 6 in. pipeline. Raising and lowering the gate simulates tidal ebb and flood currents in the bay and inlet. Instruments automatically record the simulated tides under different conditions. The project is being financed by the Port of Palm Beach and is under the direction of Per Bruun, Danish hydraulic expert with the University of Florida.



50 to 75 is a good average, but with care you can get up to . . .

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PLYGLAZE'S tough, hard surface stands up indefinitely under repeated concrete pourings. PlyGlaze forms are worn out only when the panels are cut into unserviceably small pieces. With proper design and care you should get 50 to 75 re-uses. Actually, *over* 200 have been obtained—even then PlyGlaze continues to form good-looking concrete.

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Hard, glossy-smooth wear resistant fused resin-fiber surfaces.

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a complicated job since the Delaware is such a wide tidal stream.

By keeping up with the tide as it ebbs and flows, the commission's annual report explains, "In any given day, at the same current stage, stream flow and weather conditions, a rather complete water quality picture can be ascertained." The study is centered on the river ship channel, for it already has been found that the water there is considerably inferior to that in adjacent littoral areas, and it has been determined that water quality in the channel greatly controls the quality of the entire river.

The motorboat method is expected to cut years off time required for the pollution survey.

Beach Erosion Lab Planned For Florida Shores Study

Establishment of a coastal engineering hydraulic laboratory for continuous study of beach erosion has been recommended to the Florida legislature.

The laboratory, to cost an estimated $650,000, would include a wave tank with wind tunnel; long narrow wave channel; hydraulic turning tank; model test basin for beach studies, and model test basin for river, canal and flood control studies.

The recommendation was made by the Engineering and Industrial Experiment Station of the University of Florida in a report of a study of beach erosion which has "developed seriously along the Florida shorelines." The report was prepared by Per Bruun, Danish hydraulician, who has supplemented his experiences with beach erosion in Europe with a study of critical areas along the 1,300 miles of Florida shoreline which includes 800 miles of beaches.

Researcher Bruun, with the university for the last two years, holds that while a great number of beaches have been lost to Florida because of erosion from natural reasons, "improperly designed, man-made structures have caused losses of increasing magnitude. His study was authorized by the 1955 legislature, which appropriated $25,000 for the job.

Water Stored Under River For Use During Dry Spells

Storing water underground now for use during dry periods next summer is being tried in San Diego County, Calif. Approximately 80 acre-ft of water were spread on the dry riverbed of the San Luis Rey Valley by the San Luis Rey Heights Water District.

A ring of wells has been dug 200 ft downstream from the dumping ground and another ring, still further away. The wells run about 30 ft deep. It is estimated that 60 to 70% of the water will be recovered by pumps.

The ultimate cost per acre-ft of water recovered will depend upon the amount lost by seepage downstream. Recovery cost, according to Robert Trimble, manager of the water district, is being estimated at $14 to $16 per acre-ft. The water stored was purchased at $14 per acre-ft.

Research in Incineration To Examine Basic Factors

The Incinerator Institute of America has commissioned research at the New York University College of Engineering in preparation for a code of good incinerator design. Adjunct Professor William T. Ingram is directing the project, which will be a study of the basic factors in incineration and of the problem on a national scale.

The researchers are looking into the design of incinerator combustion chambers, methods of supplying air and charging, how fly ash is settled out, combustibility of various wastes and temperature control.

Federal-State Team To Study Air Pollution

Specialists from four federal agencies will cooperate with local authorities in an expanded program to trace sources and routes of smog and smoke in the New York-New Jersey area.

The Army Chemical Corps, the Department of Agriculture, Public Health Service and the Weather Bureau will aid the Interstate Sanitation Commission, headed by Seth G. Hess, in determining also the effect smog has on human health, plant life and economic development. Frederick S. Mallette, consultant on air pollution problems, will direct technical aspects of the ISC program.

Fellowship Is Announced For Highway Engineering

The Automotive Safety Foundation has established a graduate fellowship in traffic or highway engineering at the University of Illinois.

Application forms are available at Graduate College, 109 Administration Building, and information may be obtained from the Department of Civil Engineering, 205 Civil Engineering Hall, Urbana, Ill.

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- Boiler Breechings
- Flues and Ducts
- Condenser Shells
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- Heavy Turbine Housings
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- Industrial Gas Mains
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- Wind Tunnels
- Crane Bridge Girders
- Trolley Frames and Trucks
- Rigid Frames
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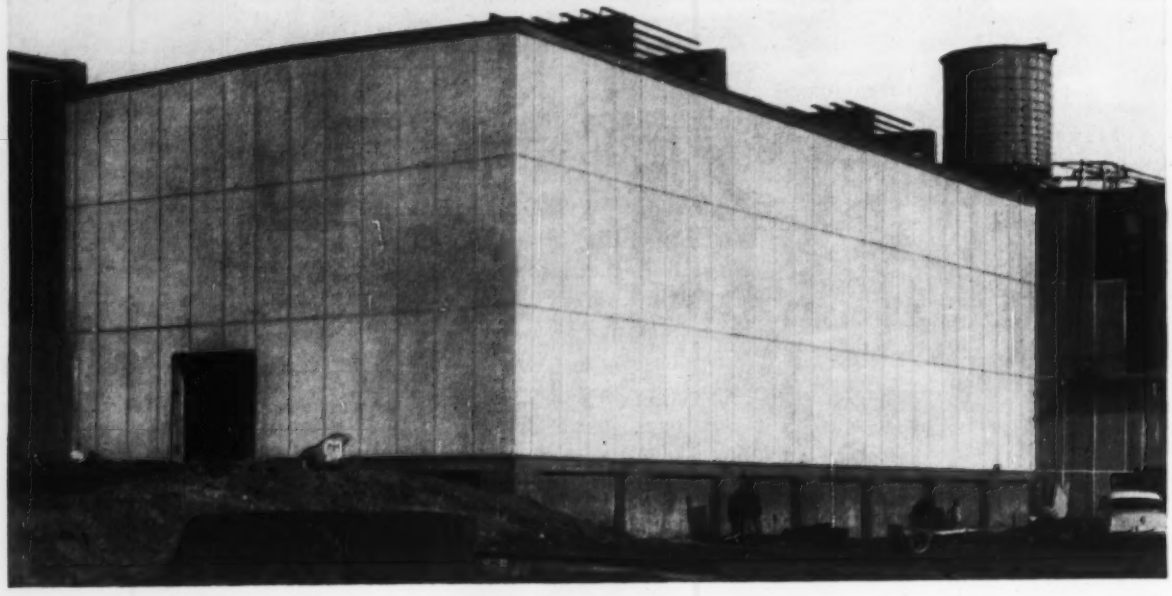
Meet the trend to modern panelized construction



THE most striking change in building construction methods in recent years has been the trend toward prefabricated building panels.

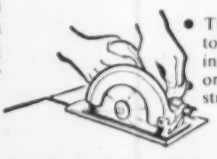
This is particularly true in the construction of panelized curtain walls for buildings, large and small. Although curtain wall construction in skyscrapers had been widely publicized, this method of construction is just as applicable to smaller buildings such as schools, hospitals, office buildings, motels and shopping centers. Today, paneled curtain walls probably exceed all other applications in popularity and are rapidly becoming the standard method of building construction.

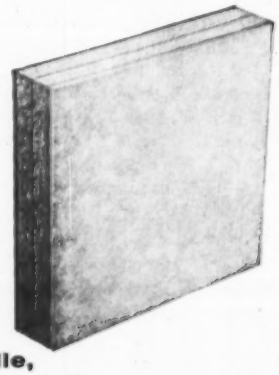
Johns-Manville Transitop offers architects, designers and builders a simple and economical method of providing panelized curtain walls. Transitop is durable, weather resistant, requires minimum maintenance. As a curtain wall, Transitop provides high structural strength, reduces the dead load, increases usable floor space, provides adequate insulation and is easy to erect. Panels are easily applied over wood or steel framing.

The same advantages that make Transitop so suitable for panelized curtain wall construction also make it equally ideal for roof deck construction.

J-M Transitop is a complete 4′ wide by 8′, 9′, 10′ or 12′ long unit in 11/16″, 1 1/8″, 1 9/16″, or 2″ thicknesses. It consists of an integral impregnated insulating board core faced on two sides with Asbestos Flexboard® sheets.

- Facings of tough, weatherproof asbestos-cement Flexboard
- Core of integrally impregnated insulating board
- Waterproof adhesive bonds core to Flexboard sheets
- Transitop is cut to fit and installed with ordinary construction tools

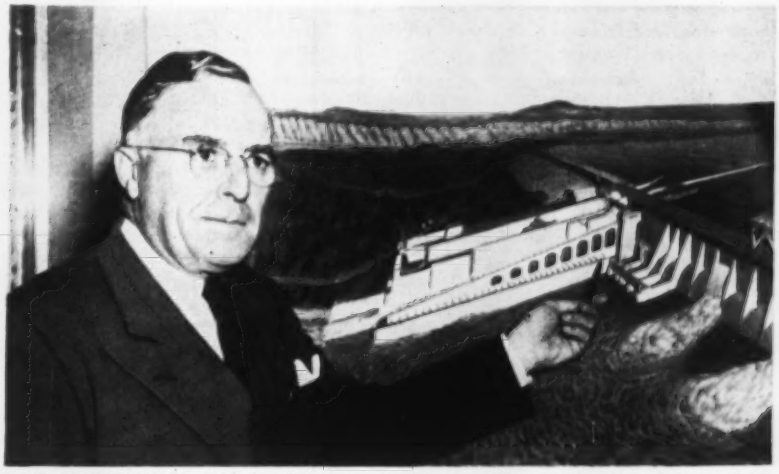




JOHNS-MANVILLE JM PRODUCTS

For information on Transitop, write Johns-Manville, Dept. ENR, Box 158, New York 16, N. Y.

Johns-Manville Transitop



GAIL HATHAWAY with a model of one of the many Corps of Engineers' dams which have benefited from his hydraulic knowledge.

River Control Expert to the World Bank

After 30 years with the Corps of Engineers, Gail A. Hathaway is retiring April 1 to assume the post of Engineering Consultant on the staff of the International Bank for Construction and Development (World Bank).

As special assistant and technical advisor to the Chief of Engineers, U. S. Army, since 1945, Mr. Hathaway has played a key role in all policy and engineering matters that have been related to planning and design of flood control, navigation and multi-purpose projects of recent years.

And as representative of the Chief of Engineers on important committees and special missions he has also been concerned with projects of a military nature. Since, from 1938 to 1945, he was chief of the reservoir regulation and hydrology branch, his river development responsibilities have been national in scope for the past 20 years.

During much of this time, too, Mr. Hathaway has been concerned with hydraulic matters on an international scale.

In 1944-45 he was special advisor to the Chief Engineer, European Theater of Operations in connection with the organization and operation of the Rhine River Flood Prediction Service, which had much to do with our military offensives in that area. In 1946 he was engineering consultant to President Truman's Cabinet Committee on Palestine during meetings in London. In 1947 he was engineering consultant to the Venezuelan government on flood control and water resource development. And he has served for several instances in the role of consultant for the World Bank—on problems pertaining to the Indus River in Pakistan, for example, and on the High Aswan Dam proposed for Egypt.

Mr. Hathaway is currently president of the International Commission on Large Dams, and during the period from 1948 to 1951 was chairman of its U. S. Committee.

Mr. Hathaway graduated in civil engineering from Oregon State College in 1922, after his education was interrupted by two years military service in France during World War I.

Thereafter, until 1928, he was assistant to the State Engineer of Oregon, resigning to accept a position as hydraulic engineer with the Kansas City District, Corps of Engineers. He remained here and in the Missouri River Division office also in Kansas City until 1938, during which time he had supervision of the hydrologic studies related to the design of Ft. Peck Dam and of later studies and designs concerned with the comprehensive development of the entire Missouri River Basin.

Active in the American Society of Engineers, Mr. Hathaway served as president in 1951, having been on the Board of Direction since 1946, first in the capacity of director and then as vice president.

In his new position with the World Bank, Mr. Hathaway will continue to exercise his abilities as an expert in the field of river control and water resource development.

Geyer Succeeds Wolman In Johns Hopkins Post

Abel Wolman has resigned as chairman of the department of sanitary engineering at Johns Hopkins University in Baltimore and has been succeeded by John C. Geyer, professor of sanitary engineering. Wolman will give up administrative duties only and will continue as a member of the faculty.

Professor Geyer is a renowned teacher, author and consultant. He received a civil engineering degree from the University of Michigan in 1931, a master's from Harvard in 1933 and a doctorate from Johns Hopkins in 1943. He came to Hopkins in 1937 and has served on the faculty continuously except for a period during World War II. He authored "Water Supply and Waste-Water Disposal" with Gordon M. Fair of Harvard.

Long one of the outstanding men in the sanitary engineering field, Abel Wolman relinquishes his post at Johns Hopkins as he approaches 65 years of age. He plans no letdown in his other manifold activities, which include dozens of committeeships, boards, consultant's commissions and advisory posts.

Consulting Firm Opens Two New Branch Offices

Woodward, Clyde & Associates, consulting civil engineering firm of Denver, and Oakland, Calif., has opened branches in Omaha and Kansas City, Mo.

James L. Sherard, expert on earthfill dams, is temporarily in charge of the Kansas City office. Later this year he will return to Denver as resident partner in charge of the Denver, Omaha and Kansas City branches. William A. Clevenger, formerly with the Bureau of Reclamation, is in charge of the Denver office.

Careers . . .

Government

James A. Clearman has been appointed to the newly created post of safety engineer for the St. Louis County Highway Department.

James L. McNamara is appointed by the Alaska District Corps of Engineers as acting resident engineer in charge of construction of a DEW-line extension along the Aleutian island chain to cost an estimated $20 million.

Samuel B. Lamb is promoted to chief of the flood control section of the

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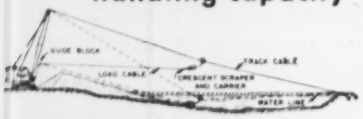

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operations division, Seattle District, Corps of Engineers, while **Jerold B. Van Faasen** is made resident engineer in the special projects office. They replace **Iner Nelson** and **Glenn Barcroft,** respectively, who have retired.

Lt. Col. Urban W. Boresch succeeds **Col. John E. Unverferth** as executive officer of the Detroit District, Corps of Engineers.

Keith F. Jones is appointed Pierce County engineer at Tacoma, Wash., succeeding **William A. Stancer,** who resigns.

Henry E. Harner, deputy secretary of state in Pennsylvania, has been named general counsel of the Pennsylvania Turnpike Commission, succeeding Arthur A. Maguire.

Henry E. Pelham is named regional project development engineer of the Bureau of Reclamation Region 3 studying developments in Arizona, California, Southern Nevada and Western New Mexico and Utah. He succeeds **John D. McCoy** who accepts an engineering post with the San Diego County Water Authority.

L. L. Funk has been named to the newly created position of photogrammetric engineer for the California Division of Highways. He has headed a photogrammetry unit set up last year by the division.

Dario Travaini, general superintendent of Phoenix' water and sewage works, is named Arizona engineer of the year.

William Andrews, district engineer for the Bureau of Public Roads at Ft Worth, has been promoted to division engineer at Juneau, Alaska. He replaces **A. F. Ghiglione,** who is expected to become an assistant to the Commissioner of the Bureau at Washington, D. C.

William E. Stinchfield, chief of the civil projects section in the design branch of the Seattle District, Corps of Engineers, is assigned as resident engineer at Chief Joseph Dam on the Columbia River. He succeeds **B. L. Lester,** who is transferred to the New England Division for duty on the Passamaquoddy tidal power survey.

George H. Cook is appointed construction engineer in the Atomic Energy Commission's Burlington Area Office at Burlington, Iowa. He is to administer AEC construction programs under way at Iowa Ordnance Plant, near Burlington, and at Pantex Ordnance Plant, near Amarillo, Texas.

Ted P. Scholz, city engineer and public works director at Bellingham, Wash., for the last eight years, has been appointed public works director for Tacoma, effective April 1. He will succeed L. P. Staman, who has resigned.

Sidney D. Betzing has been appointed to succeed Norman F. McKay as district construction engineer for the Washington State Highway Department at Yakima.

Thomas H. Cutler, Kentucky State Highway Department engineer in charge of urban projects, has been sent by the State Department to Thailand, where he will act as a highway consultant.

Gerald Millar, is appointed chief engineer of the harbors and rivers engineering branch, Canadian Department of Public Works, Ottawa, succeeding **Brigadier Jean P. Carriere,** who resigned to enter engineering practice at Montreal.

Jack R. Swaine, a veteran of 22 years with the Florida Road Department, has been appointed acting chief engineer by the Florida State Turnpike Authority, succeeding **Sam P. Turnbull,** who has become engineer director of the Florida Road Builders' Association. Mr. Swaine, a graduate of the University of Florida, began his career as a rodman with the road department.

L. Page Benton, who has been serving as assistant city manager and city engineer at Goldsboro, N. C., has been named city manager, succeeding **Zeno B. Howell,** who has retired after 25 years of city service. Mr. Benton, assistant city engineer since receiving his civil engineering degree from North Carolina State College in 1955, became assistant city manager about a year ago.

Earl Lloyd, deputy Wyoming state engineer, has been appointed to succeed **L. C. Bishop** as state engineer. **George Christopolus,** assistant engineer for several years, will be named deputy state engineer. Mr. Bishop, now 72, is retiring April 1 after 18 years as state engineer. Lloyd joined the engineer's office as an assistant in 1924, but resigned in 1933. He returned to the office in 1936 and was named deputy state engineer in 1939.

Philip P. Thoin, assistant treasurer of John Cowper Co. Inc., Buffalo, N. Y. has been elected president of the Construction Industry Employers Association, an organization representing nearly all industrial and commercial construction contractors in western New York.

W. Howard Sharp, traffic control engineer in the Connecticut State Highway Department, has resigned his post after 37 years of service. He joined the department in 1913 as engineer of repairs, but resigned five years later to become town engineer for West Hartford, Conn. In 1923 he returned to the highway department as engineer of maintenance, and in 1932 was made associate highway engineer. In 1950 he was promoted to engineer of control. Before entering the highway depart-

ment he worked as a civil engineer with the Boston & Maine Railroad and the New Haven Railroad.

Industry

A. M. Anderson, executive secretary and chief engineer of New York's Niagara Frontier State Park Commission, has resigned his post to join the New York City consulting engineering firm of William H. Byrne, P. E. Prior to his affiliations with the park commission, Anderson was general superintendant of the New York City Housing Authority.

In his new position, he will manage the City Planning and Highway divisions; act as liaison with governmental agencies, and supervise civil engineering studies.

William N. Pauley, in charge of the Spokane office of H. E. Bovay, Jr., Consulting Engineers, has been advanced to partner in the firm.

John A. Heckle has been appointed construction chief of the Cantor & Goldman building organization of Saverville, N. J.

Edwin R. Albertson and **Charles T. Walsh** have been admitted as partners in Bowe, Albertson & Associates, New York engineering firm.

Associations

Max J. Kuney, Spokane contractor, is elected president of the Pacific Northwest branch of the Associated General Contractors.

James E. Hanrahan, Jr., treasurer of Siegfried Construction Co., Inc., will serve as vice president of Construction Industry Employers Association.

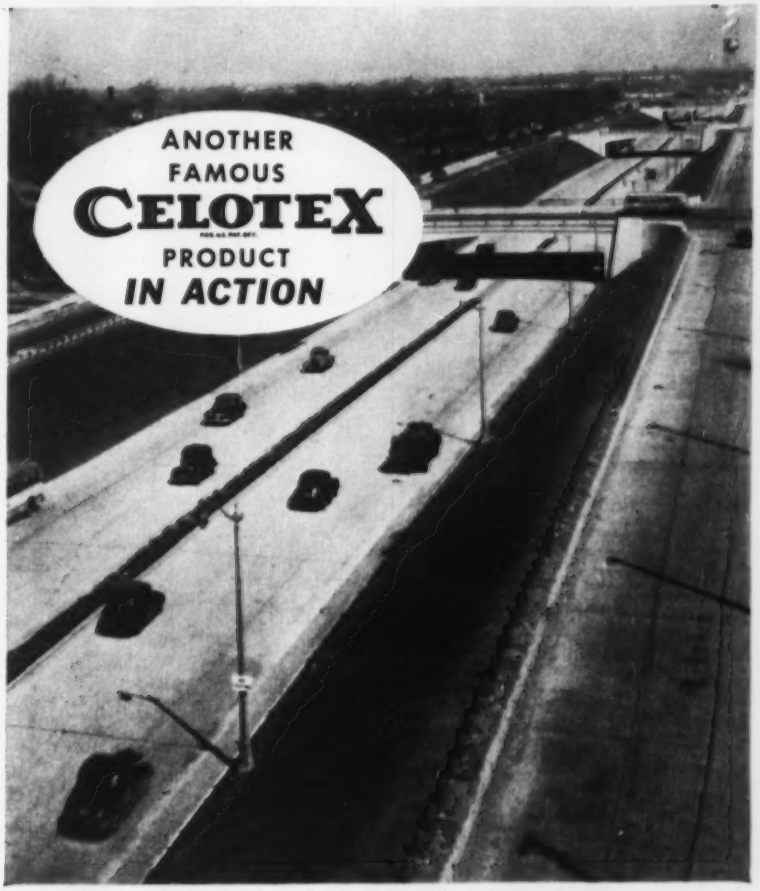
Jolden A. Evans, Jr., will leave his post as general manager of the New York State Thruway Authority to become managing director of the New York State chapter of the Associated General Contractors.

Retirements

Sam DeMoss, chief of the civil works section in the engineering division, Seattle District, Corps of Engineers retires after 23 years of government service.

Earl J. Reeder, a partner in the firm of Rader & Associates, Miami, Fla., has retired. Now 66, Mr. Reeder has been chief of the concern's traffic and transportation engineering section having joined the firm after resigning as Miami's director of traffic and transportation in June, 1950.

Ernest H. Stork, an employee of the City of Columbus for 42 years, will retire April 1 as city planning director.



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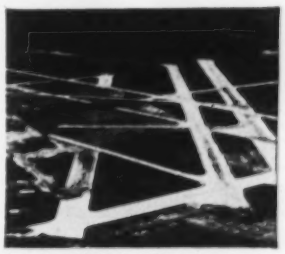
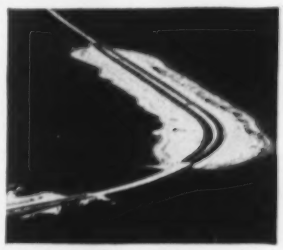

Cleveland Municipal Airport, where 2½ million people landed or took off last year on runways protected by Flexcell Joint Filler.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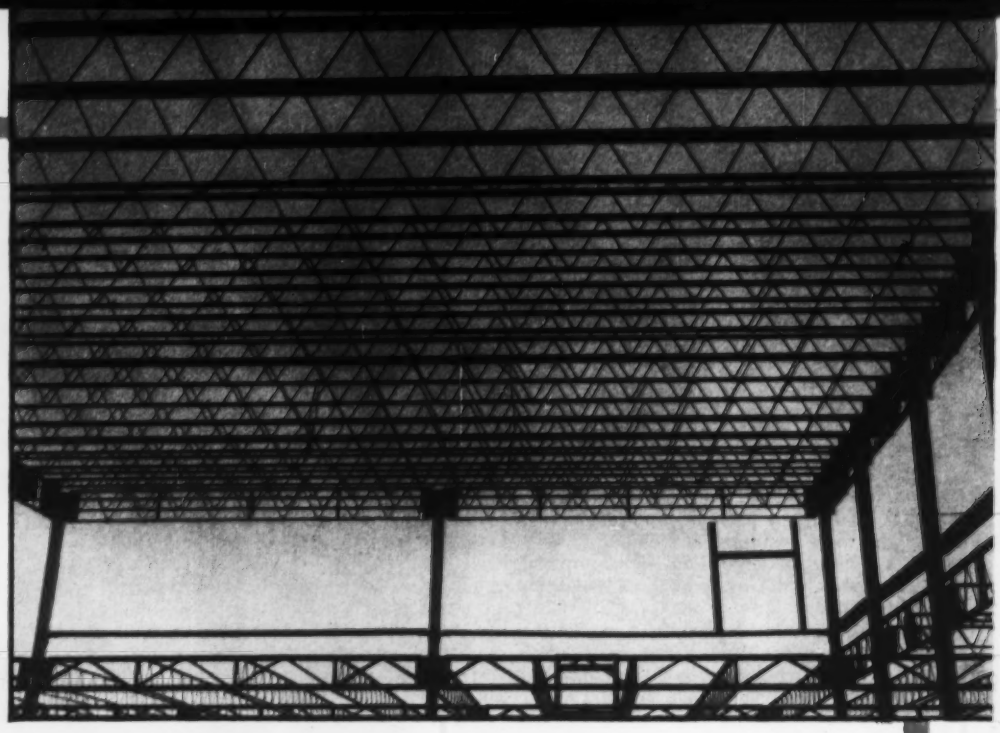
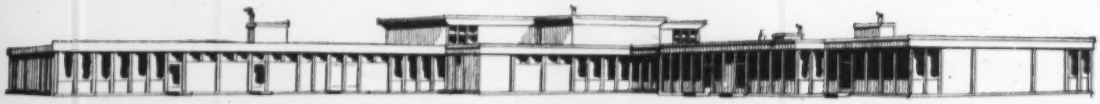


The Mother Seton School, Emmitsburg, Md., erected by American Bridge, included 134,400 pounds of structural steel and joists; 45,100 pounds of roof deck; 2,500 pounds of shop weld rods; and 9,600 pounds of well and curb liners. Porcelain-enamel steel wall panels were supplied by U. S. Steel Homes.

Architect: Earl M. Harvey
Contractor: Structo Schools Corporation—Boston
Industrial Engineering Co. —New York



Strong, lightweight AMBRIDGE STEEL JOISTS support roof deck of new "Structo"-built Mother Seton School

THE MOTHER SETON SCHOOL for the Daughters of Charity of St. Vincent De Paul in Emmitsburg, Md., one of the first "Structo Schools" ever built, combines the use of factory-fabricated porcelainized steel wall panels and AmBridge Steel Joists.

It is significant that for this revolutionary type of school construction, AmBridge Steel Joists were selected to support the steel deck roof.

These joists not only provide strong, rigid, lightweight support for the 45,000-pound roof deck, but also offer collateral advantages which make them ideal for use in floor, roof and ceiling construction of any modern building.

Their underslung, open-web design allows free passage of conduits, pipes, and ductwork in any direction. Their ease of handling cuts installation time to the bone. Use them for roofing to get your structure under cover sooner. Use them for floors, and other trades begin work more promptly, helping you maintain work schedules.

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AMBRIDGE STEEL JOISTS

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UNITED STATES STEEL

Obituaries

F. J. Blythe, 68, president of the Blythe Brothers Construction Company of Charlotte, N. C., died March 7.

A native North Carolinian, Mr. Blythe attended the University of North Carolina and on graduating took a job as a railroad locating engineer. He held various engineering positions before he and his late brother, Joseph L. Blythe formed Blythe Brothers in 1921 and developed it into one of the largest roadbuilding firms in the south.

During World War II, Mr. Blythe headed a construction combine which built Camp LeJeune, N. C. and numerous airfields in Africa, Puerto Rico and Haiti.

A past president of the Carolinas branch, Associated General Contractors of America, he was named to the North Carolina State Senate in 1949 to fill out the unexpired term left by the death of his brother, Joseph. He was elected to a full term in 1954 and was re-elected in 1956, but resigned the office last February upon advice of his physician.

Julian G. Bailey, 78, retired civil engineer, died recently in Philadelphia. Prior to his retirement two years ago, he had been associated with the city of Philadelphia in various engineering capacities for more than 31 years.

Louis E. Jallade, 81, architect, died Feb. 26 in New York, where he had maintained an architectural firm under his own name and in partnership with his son. A former president of the New York Society of Architects, he also served, in 1944, as rent director in Brooklyn for the Office of Price Administration. He received professional training at the Metropolitan Museum Art School and the Ecole des Beaux Arts in Paris. He was retired from the National Guard with the rank of brigadier general in 1947.

George L. Dresser, 71, civil engineer and contractor of Albany, N. Y., died in Walterboro, S. C.

Albert J. Anderson, 56, erection manager of the American Bridge Division, U. S. Steel, died Feb. 13 in Chicago. He had been with the steel corporation for 32 years.

Kenneth W. Lefever, 59, consulting civil engineer of Little Rock, Ark., died Feb. 21 in Jackson, Miss. He had been associated with numerous residential and industrial developments in Arkansas, and had served as president of the Arkansas Society of Professional Engineers and the Mid-South Section of the American Society of Civil Engineers. Before going into private practice he was an engineer with Ford & Bacon, consulting engineers of Little Rock, and the Arkansas State Highway Department.

Charles M. Leahy, 73, civil engineer who was active in highway and sewer construction in Queens, N. Y., died Feb. 17. He received his civil engineering degree from Columbia University. From 1915 to 1930 he operated his own firm, Stanhy Construction Co. In 1933 he became a civil engineer for the Department of Interior, and five years later joined Carmine Petracca and was engineer in charge of sewer installation for the New York World's Fair. Since 1948 he has been with Tully & Di Napoli.

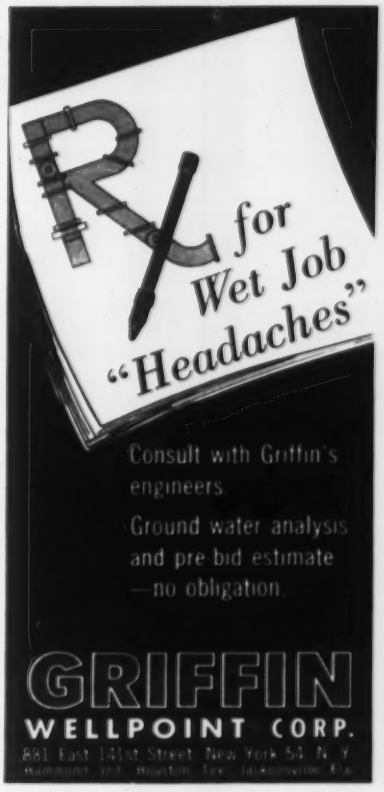
Matthew Balls, who retired in 1954 as assistant vice president of Shawinigan Water & Power Co., and manager of the company's hydraulic resources department, died Feb. 13 in Sweetsburg, Quebec. He began his engineering career in Canada in 1926 and—before joining the water and power company in 1926—was engaged in railroad surveys and construction in the U. S., British Columbia and Alaska.

Milam Tandy, 53, an engineer who helped erect hydroelectric plants in West Africa's Republic of Liberia, died Feb. 13 in Louisville. He was a graduate of Massachusetts Institute of Technology and, most recently associated with Liberty Engineering & Manufacturing Co. in Louisville.

Charles S. Carleton, 84, former professor of civil engineering at Norwich University, Northfield, Vt., died at Suffield, Conn., Feb. 21. He was graduated from Norwich in 1896 and joined its faculty in 1900.

Irwin E. Burks, 64, retired construction engineer, died at Ft. Belvoir, Va., Feb. 22. An early leader in development of methods of design and control of concrete mixtures in heavy construction, his career included service with the Aluminum Co. of America and the Corps of Engineers.

Claude Coykendall, 70, retired Iowa highway engineer, died Mar. 5 in Ames. His career included service as an instructor at Iowa State College, administrative engineer with the Iowa Highway Commission and executive secretary of the Iowa Good Roads Association.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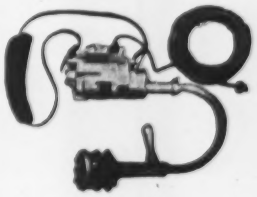

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Sub's Materialmen Recover From General's Surety

A New York court has held that a subcontractor's materialmen fall within the protection of the prime contractor's surety bond when the language used in the bond does not condition the protection on the existence of a contractural relationship with the prime contractor.

In that case, Western Electric Co., Inc., had entered into a contract with the United States government to perform work at Stewart Air Base, Newburgh, N. Y. Western Electric subcontracted part of the work to H. K. Ferguson Co., which in turn subcontracted part of the work to Baker Smith Co., Inc.

After Baker Smith Co. performed some of the work, a jurisdictional strike occurred on the job, causing Baker to stop work. Ferguson then cancelled its contract with Baker. Baker was later adjudged bankrupt, and materialmen that had supplied it with materials used on the job brought an action against Ferguson's surety to recover the balance due them for the materials so furnished.

The bond furnised by Ferguson contained the following provision: * * * if the principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract * * * then this obligation to be void; otherwise to remain in full force and virture."

The materialmen made an application to the court for a summary judgment, contending that the surety was liable to the materialmen as a matter of law. The court granted the application, holding that the only matter at issue was how much was owing the materialmen.[1]

Ferguson contended that the bond was a non-statutory common law bond and was for the protection only of those contractors, laborers and materialmen who were in direct contractual relationship with Ferguson, the principal named in the bond, and did not apply to persons who furnished materials to a subcontractor employed by Ferguson. The surety contended, that since the materialmen bringing the action had no contractual relationship with Ferguson, they were not entitled to recover under either the performance or payment bonds. As has been indicated, the court held the surety liable.

The court stated: "There can be no question, in view of the recent decision by the Court of Appeals in Daniel-Morris Co. v. Glens Falls Indemnity Co., 308 N. Y. 464, 126 N. E. 2d 750,751, that a bond such as the one here involved is not intended merely to indemnify the obligee named therein, but materialmen supplying materials to the obligor in the prosecution of the work provided for in the contract between the obligee and the obligor. The question posed by the instant case is whether such a bond indemnifies, and may be enforced by, any person 'supplying labor and material in the prosecution of the work provided for in' the contract between the obligor and the obligee, even if, unlike the situation in the Daniel-Morris case, supra, such labor and material were not furnished directly to the obligor.

"Where a contract is unambiguous 'evidence of the intention and acts of the parties plays no part in the decision of the case. Plain and unambiguous words, undisputed facts, leave no question of construction for the court.' Brainard v. New York Central R. Co., 242 N. Y. 125, 133, 151 N. E. 152, 45, A. L. R. 751. Absent any ambiguity in the language used by the parties, the court concerns itself with what they intended 'only to the extent that they evidenced what they intended by what they wrote * * *.' Raleigh Associates, Inc., v. Henry, 302 N. Y. 467, 473, 99 N. E. 2d 289,291.

"This court is of the opinion that the terms of the payment bond in suit are not ambiguous and, therefore, the intention of the parties must be ascertained solely by reference to the language used therein to express such intention, without resort to extraneous evidence. Hartigan v. Casualty Co. of America, 227 N. Y. 175, 124 N. E. 789. A separate performance bond having been furnished to Ferguson to afford Western Electric protection for non-completion of the work, it is evident that the parties to the payment bond intended thereby to benefit 'all persons supplying labor and material *in the prosecution of the work* provided for in' the contract pursuant to which said bond was executed and delivered. (Emphasis supplied.) Daniel-Morris Co. v Glens Indemnity Co., supra. Had the parties intended to limit the benefits of the payment bond to persons supplying labor and material *directly* to Ferguson, language appropriate to that purpose could readily have been used. Instead, the defendants agreed to benefit all unpaid persons who supplied labor and material in the prosecution of the work provided for in Ferguson's contract with Western Electric. That included the plaintiff who furnished material in the prosecution of that work, albeit pursuant to its agreement with Baker Smith which, in turn, was under contract with Ferguson to prosecute a portion of its work for Western Electric. The plaintiff (materialman) is accordingly entitled to sue the defendants (Ferguson Co. and its surety) for the recovery of its unpaid balance for materials supplied as a third-party beneficiary of said payment bond."

The court further indicated that since there was a dispute as to the amount due the materialman, the amount should be determined by a referee, or a trial, at the election of the parties.

(1) Neill Supply Co. v. Fidelity & Deposit Co. of Md., 152 N.Y.S. 2d 157, Supreme Court, Queens County, New York, April 11, 1956.

Surety's Performance Bond Didn't Protect Materialmen

A Maryland court has held that the performance bond of a general contractor's surety does not protect laborers and materialmen.

The circumstances were these: Victor N. Judson, Inc., entered into a contract with the Board of Education of Montgomery County, Md., to construct an addition to an elementary school. On the same day that the contract was entered into, Aetna Casualty & Surety Co., executed and delivered a bond in connection with said work. The surety bond provided as follows: "Now Therefore, the condition of this obligation is such, that if the Principal shall fully indemnify and reimburse the Obligee for any loss he (they, it) may suffer through the failure of the Principal to faithfully observe and perform each and every obligation and duty imposed upon the Principal by the said contract, at the time and in the manner therein specified, then this obligation to be void; otherwise to remain in full force and virtue in law."

An action was brought by persons furnishing material and labor to the general contractor against the general contractor and surety for labor and materials furnished to the general contractor in the performance of the con-

tract on its part. The action was dismissed as against the surety, the trial court holding that the bond was only a performance bond executed for the benefit of the Board of Education and to indemnify it for any losses that it might sustain as a result of nonperformance on the part of the general contractor. The court held that the sole remedy for the persons supplying labor and materials was an action against the prime contractor. This judgment was affirmed on appeal.[1] The court indicated that there was no statutory requirement that the bond to be given should be for the protection of materialmen and laborers.

(1) Board of Education of Montgomery County, Md., et al. v. Victor N. Judson, Inc. and Aetna Casualty & Surety Co., 126 A. 2d 615, Court of Appeals of Maryland, Nov. 8, 1956.

Prevention of Performance Is a Breach of Contract

"Where a contract is substantially performed and complete performance is prevented by the wrongful act of the defendant (owner) in repudiating the contract, plaintiff (contractor) is entitled to recover under the contract. Performance is excused where it is rendered impossible by the other party. Where one party renounces his liability under the contract or makes it impossible for the other to perform, a breach of the contract occurs."[1]

(1) Wormbecker v. Donovan Const. Co., 76 N.W. 2d 643.

Contract Is Construed According To Its Terms

The general "rule is that where a contract has been reduced to writing, which purports upon its face to be an expression of the whole agreement between the parties, the intention of the parties can only be determined from the language used in the instrument. In other words, the court is bound to determine the intention of the parties within the four corners of the instrument and from the words used therein, and effect must be given to the plain and obvious import of the language so used if unambiguous. Green v. Ashland Sixty-Third State Bank, 346 Ill. 174, 178 N. E. 468."[1]

At the trial of the above case, one of the parties offered evidence of custom and usage in the industry which was in conflict with the terms of the written contract. The trial court refused to permit such evidence to be given and its determination was affirmed on appeal. As to this phase of the litigation, the appellate court, quoting from another Illinois case,[2] stated: "The general rule is that a custom or usage which is repugnant to the terms of an express contract is not permitted to operate against it and evidence of such custom or usage is inadmissible, for, while usage may be admissible to explain what is doubtful, it is never admissible to contradict what is plain."

(1) Sitnick v. Glazer, 138 N.E. 2d 84, Appellate Court of Illinois, Sept. 25, 1956.

(2) El Reno Wholesale Grocery Co. v. Stocking, 293 Ill. 494, 127 N.E. 642, 644.

No Right to Payment If Been Overpaid in Past

A Louisiana court has held that it is a breach of contract for a contractor, who has already received through an overpayment more than is due him to date for work performed, to refuse to proceed with the work unless the owner continues to make the weekly payments required by the contract.

In that case, the contract provided for weekly payments covering 80% of the work performed. The contractor demanded a weekly payment at a time that the owner had overpaid him for the work that the contractor had performed. The owner refused to make such payment, whereupon the contractor refused to continue the work and brought an action against the owner to recover damages for breach of contract, contending that the failure to make the weekly payment constituted a breach of contract.

The trial court found as a fact that prior to the time the demand was made for the weekly payment the contractor had received a substantial overpayment for the work he had performed. Under such circumstances, the court concluded, refusal on the part of the owner to make the weekly payment was justified, and the failure of the contractor to continue with the performance of the work constituted a breach of the contract. This judgment was affirmed on appeal.[1]

(1) Sanders v. Walther, 85 So. 2d 8, Supreme Court of Louisiana, Jan. 16, 1956.

These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.

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24X Periscopic telescope containing a "pendulum-principle" device which automatically produces and maintains a horizontal line of sight.

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Direct view of the spherical bubble through the telescope eyepiece, allowing constant check on the bubble centering while reading rod.

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±0.028 ft./mile if used with regular base; ±0.010 ft./mile if used with special up-down movable base (micrometer Mod. 5180) graduated to 1/1,000 ft. or to 1/10 mm.

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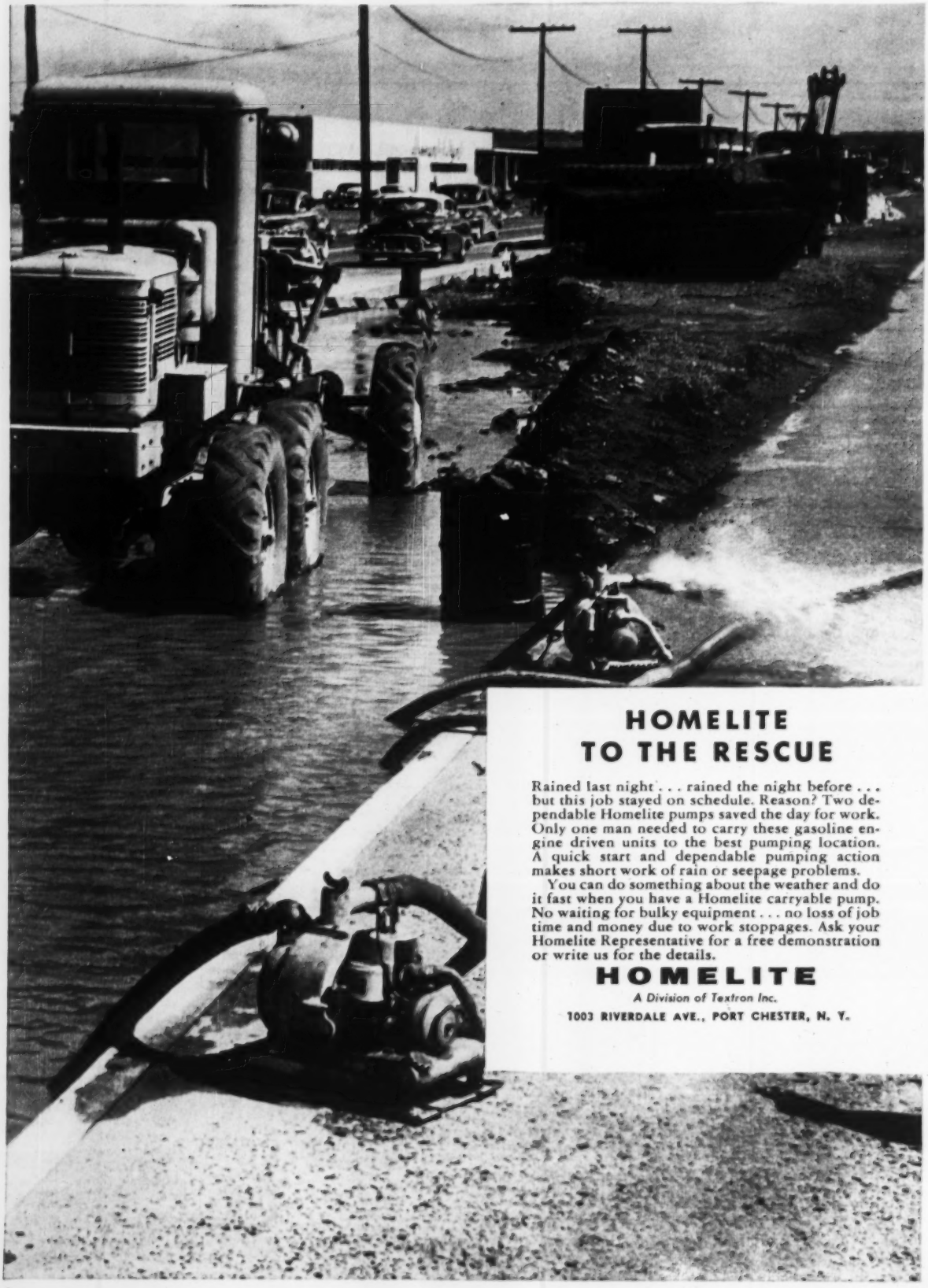

HOMELITE TO THE RESCUE

Rained last night . . . rained the night before . . . but this job stayed on schedule. Reason? Two dependable Homelite pumps saved the day for work. Only one man needed to carry these gasoline engine driven units to the best pumping location. A quick start and dependable pumping action makes short work of rain or seepage problems.

You can do something about the weather and do it fast when you have a Homelite carryable pump. No waiting for bulky equipment . . . no loss of job time and money due to work stoppages. Ask your Homelite Representative for a free demonstration or write us for the details.

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1003 RIVERDALE AVE., PORT CHESTER, N. Y.

Water Supply Dam in Okla. Draws Wide Range of Bids

Twenty bids on Spring Creek Dam range from $573,434 to $962,330. The earthfill dam for the municipal water supply of Chickasha, Okla., is 13.5 miles northwest of this city in Grady County.

Alexander Engineering Co., Oklahoma City, Okla., is consultant for the city of Chickasha.

The successful bid from M. & M. Construction Co., Healdton, Okla., is 2.6% below the second low and 40% below the high bid. Bids are from 3.2% to 71% above the engineer's estimate.

The dam is 3,230 ft long. Its top is 60 ft above the valley floor. Work includes a cut-off trench with a maximum depth of approximately 38 ft and a sod spillway, 400 ft wide and 1,800 ft long.

Spillway excavation encounters an undetermined quantity of sandstone and excavation for the cut-off trench involves very fine saturated sand.

Excavation and waste from spillway and cut-off trench is priced $0.30 per cu. yd. This prices does not cover the excavated material used in the embankment. Payment for this is included in the item "Compacted Earthfill" priced $0.25 per cu yd.

Bidders competed also on the time required to start and to complete the work. The contractor agreed to start five days after contract award and to complete the job in 270 working days. Other bids ranged from one day to start and 180 days to complete the work to 10 and 365 days respectively.

The twenty bidders on the water supply dam include:

1C M. & M. Construction Co., Healdton, Okla.	$573,434
2 Simms Construction Co., Duncan, Okla.	588,651
20 Jay C. Sanders, Contractor, Oklahoma City, Okla.	962,330
EE Alexander Engineering Co., Oklahoma City, Okla.	555,871

Bids: 1-10-57 Items	Unit	Quantity	Unit Prices 1 C	 2
Clear & grub dam site & related areas	ac	50	$7 00	$50 00
Strip & prepare dam site	ac	24	40 00	200 00
Earthfill, compact ip	cy	1,203,000	0 25	0 24
Riprap, stone, 18" ip	sy	37,400	2 70	3 00
Strip sod downstream face of dam, ip	sy	48,000	0 35	0 35
Guide posts, timb, 6x80"	ea	400	4 00	4 00
Exc & waste from cut-off trench	cy	10,000	0 30	2 00
Pvmt, conc, 6", ip, 1,800 sy	ls	job	10,350	7,200
Main drain, RC box culv, 48x48", 400 lf	ls	job	12,844	11,700
Cut-off collar, main drain, reinf conc, ip	ea	11	128 00	220 00
Head wall, main drain, reinf conc, ip	ea	1	156 00	286 00
CIP, cl 28, met jt, 24", ip	lf	400	26 35	24 00
Cut-off collar, supply line, reinf conc, ip	ea	11	63 00	210 00
Intake struct, RC, compl ip	ls	job	40,988	42,000
Walkway, conc, to control tower, compl ip	ls	job	17,500	15,000
Strip sod chan spillway	sy	112,900	0 35	0 35
Exc & waste from spillway	cy	50,000	0 30	0 24

Bids: 1-10-57 Items	Unit	Quantity	Unit Prices 1 C	 2
Alternate (not incl in contract) Riprap, 19,000 sy	ls	job	14,250	38,000

Time to complete: 270 working days
Liquidated damages: $250 per day

Water Main and Sewer Extensions in Maryland

These bargain prices for Forestville District water and sanitary sewer systems in Berkshire, Md., are 21.2% below the engineer's estimate but only 0.4% below the second low bid. It is part of the Washington Suburban Sanitary District in Hyattsville, Md.

The contractor, Vincenzo Naccarato of Hyattsville, bid low also on 1,670 ft of sewers which have not been awarded.

The $38,205 contract calls for 4,770 lin ft of 1½ in. to 8 in. water main and for 4,280 lin ft of 8 in. and 6 in. sewer with house connections. Concrete or vitrified clay sewer pipe is furnished by the contractor. The Sanitary Commission supplies the cast iron pipe for the water mains and manhole frames and covers.

The eight bidders include:

Part I

1C Vincenzo Naccarato, Hyattsville, Md.	$38,205
2 Henry J. Bowie, Excavating Co., Welcome, Md.	38,659
8 Ventresca Brothers	55,745
EE Washington Suburban Sanitary Commission	48,505

Bids: 12-26-56 Items	Unit	Quantity	Unit Prices 1C	 2
Exc & bkfl, water main, 1½"	lf	140	$0 29	$0 40
6"	lf	1,550	0 34	0 40
8"	lf	3,080	0 38	0 40
sewers, 6&8", to 8'	lf	710	0 44	1 80
8-10'	lf	1,660	0 60	2 00
10-12'	lf	1,180	1 20	2 90
over 12'	lf	730	2 00	4 00
Exc & bkfl, hse connect, sewers & water main, under 6'	lf	1,100	0 40	1 00
6-8'	lf	1,660	0 50	1 50
over 8'	lf	800	0 55	1 50
Water main, CI, type K, 1½", I	lf	140	0 34	0 40
6", lay	lf	1,550	0 36	0 40
8", lay	lf	3,080	0 40	0 40
Fire hydrant, set	ea	5	30 00	25 00
Sewer, CP, ES, or VCP, 6", f&I	lf	300	2 85	1 20
8", f&I	lf	3,980	3 15	1 90
Hse connect, sewer, 4 or 6", f&I	lf	2,960	2 44	1 00
T & Y branch, 6x4", 6x6", f&I	ea	26	7 00	7 00
8x4", 8x6", f&I	ea	68	9 00	8 00
Manhole, construct	vf	110	27 00	26 00
Lamp hole, construct	vf	3	19 00	40 00
Drop conn, type A, construct, 6"	ea	1	25 00	60 00
8"	ea	4	35 00	75 00
Repave, other than state road	sy	10	10 00	12 00
Underdrain, 6", f&I	lf	1,200	1 25	1 40
Refill, gravel	cy	80	7 00	8 00
Exc, test pit	cy	20	10 00	5 00
Sheeting & shoring	Mfbm	25	65 00	60 00

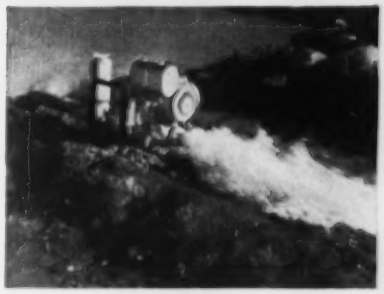
Scheduled to be completed: 3-30-57
Liquidated damages: $35 per day

Part II (not awarded as this is reported)

1 Vincenzo Naccarato, Hyatsville, Md.	$10,880
2 Ventresca Brothers	12,925
8 F. Lopez, Concrete Contractor	16,445
EE Washington Suburban Sanitary Commission	12,831

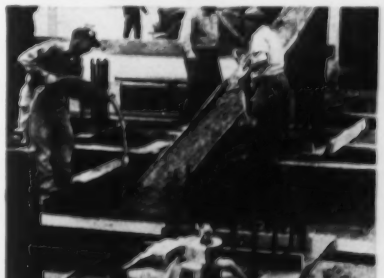
Bids: 12-26-56 Items	Unit	Quantity	Unit Prices 1	 2
Exc & bkfl, sewer, 8", under 10'	lf	1,480	$0 55	$2 50
over 10'	lf	190	1 00	3 00
Sewer, CP, ES, or VCP, 8", f&I	lf	1,670	3 15	2 50
Manhole, construct	vf	.....	27 00	24 00
Repave, other than state road	sy	.....	10 00	10 00

Full Line of Carryable Construction Equipment Now Offered by Homelite



Carryable Diaphragm Pump . . . This self-priming, 120 pound diaphragm pump will handle water in the thickest sand, muck, or mud. Capacity: 5,000 g.p.h. Size: 3". Complete line of centrifugal pumps are also available in sizes from 1½" to 3".

Chain Saws For Every Job . . . Now you can choose from a full line of lightweight, powerful Homelite chain saws. From 3½ to 7 horsepower . . . 19 to 29 pounds. Brush cutting and clearing attachments are available to handle all your cutting jobs.



One-Man Electric Vibrator . . . It takes only one man to place concrete with powerful, Homelite high-cycle or universal electric concrete vibrators. Carryable Homelite generator provides power for high-cycle vibrators *and* 110 volt DC for all universal vibrators, tools and floodlights.

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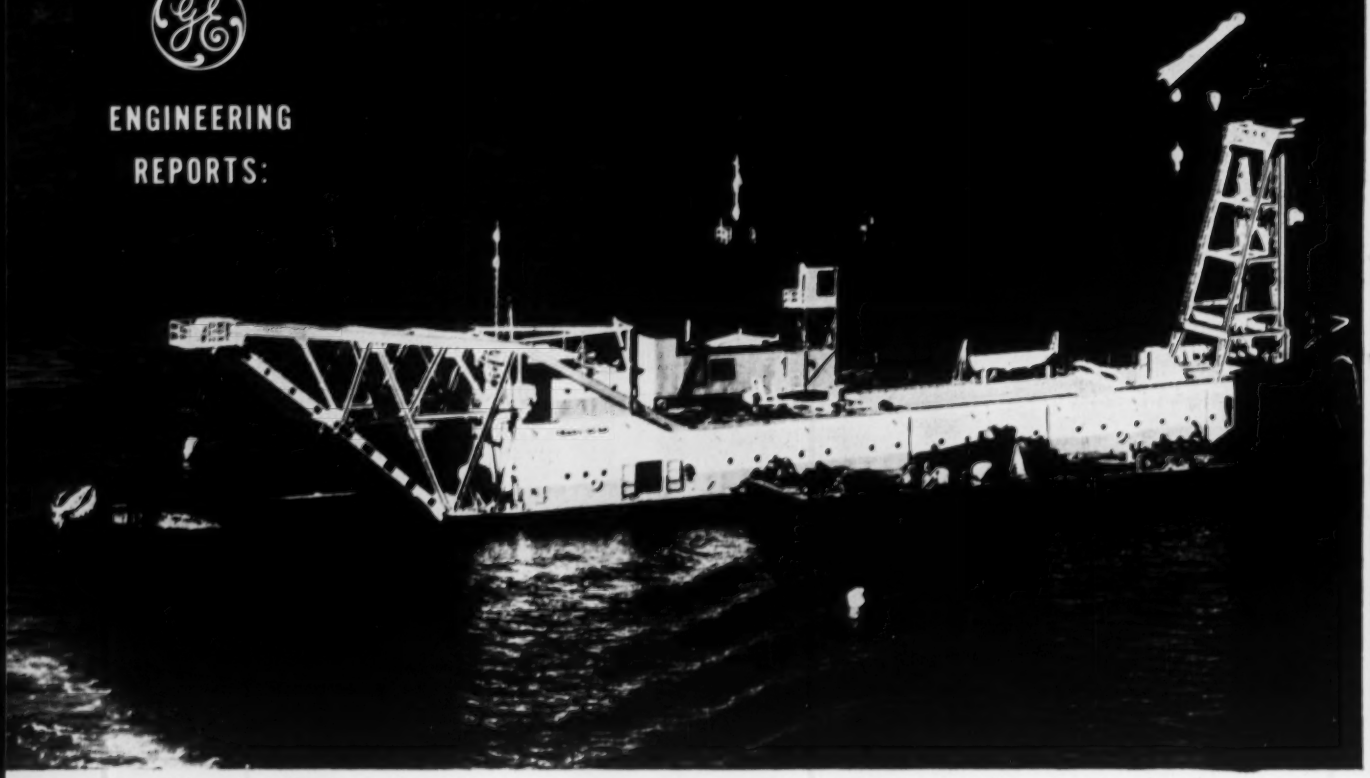
ENGINEERING
REPORTS:

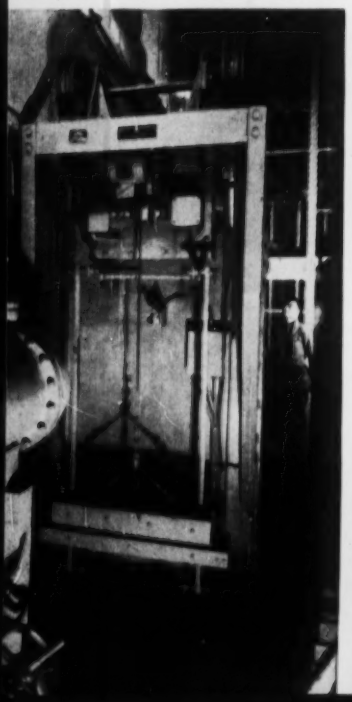


ONE OF WORLD'S LARGEST, dredge sucks sand from Bay bottom, pumps it 8,700 feet to shore through 30-in. pipeline.

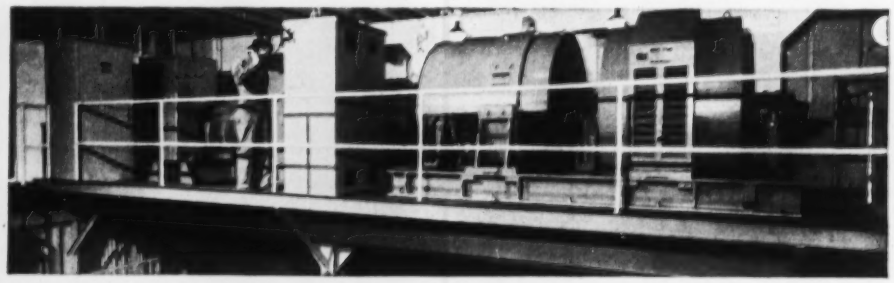
POWERED BY GENERAL ELECTRIC SYSTEM . . .

Utah Construction's giant new dredge helps

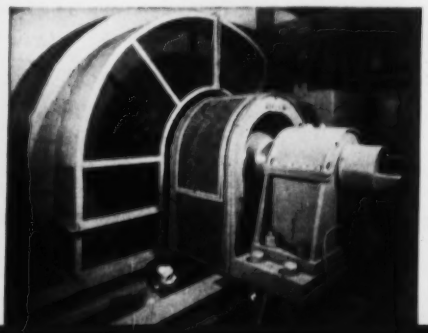
SPEED CONTROL of 8000-hp pump-drive motor is accomplished with liquid rheostat.



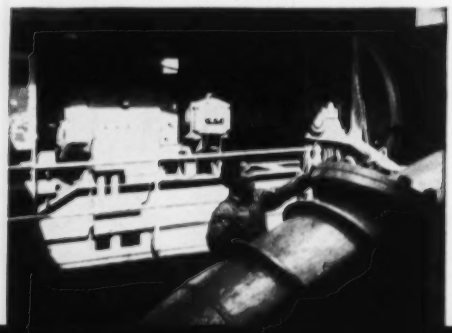
MOTOR-GENERATOR SET provides reliable, efficient power for d-c drives. Unit includes 2250-hp motor and 1250, 200, 100-kw d-c generators which are platform-mounted to save limited floor space. All components are accessible for inspection and routine maintenance.



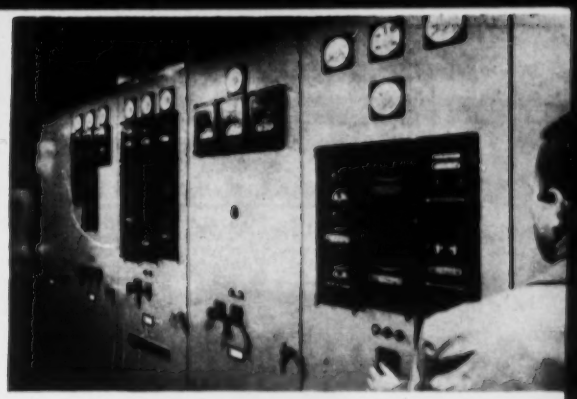
SUCTION-PUMP DRIVE is sturdy, General Electric induction motor, specially designed to withstand the stresses of pumping operation.



WINCH AND HOIST DRIVES are sturdy Type-CD, direct-current motors built to give reliable service during overloads on application.



DREDGE POWER is reliably provided by three 3333-kva transformers, supplied 12-kv power from shore. RM* units come completely assembled and equipped to cut installation time, costs.



PROTECTION, SWITCHING of main power circuits is performed by metal-clad switchgear with Magne-blast circuit breakers. Packaged units help save space in dredge.

LOW-VOLTAGE POWER, CONTROL comes from transformer supplying 480/277-v power and motor control center offering space-saving control of auxiliaries.

add 390 acres of new land to Alameda, Calif.

Built by Yuba Mfg. Co., "Franciscan" pumps over 1,000,000 cu. yds. of sand per month to turn tidelands into housing sites

Across the Bay from San Francisco, the land area of Alameda is currently being enlarged by eight percent. To do this, Utah Construction Co. is using one of the world's largest pipeline dredges to suck sand from the bottom of the Bay and deposit it ashore where new acreage is being formed for a housing project.

ENGINEERING ASSISTANCE and major equipment for the electrical system of the $2.5 million dredge were supplied by General Electric. G-E application engineers worked closely with engineers of both the contractors and the dredge builder, Yuba Manufacturing Co.

Taking a "system" approach, General Electric engineers helped select the right drive equipment for the various dredging functions, then assisted in making sure the power distribution and control equipment was integrated with these drives. Other G-E engineers were on hand to help facilitate installation and start-up of the electric equipment.

Thus, years of General Electric experience in equipment design and application for dredges and other construction tools helped the customer attain highest reliability and longest life on tough, round-the-clock dredging operations.

ELECTRIFICATION OF CONSTRUCTION TOOLS with G-E engineering and equipment can pay off for you too. Whether it be application of electric power to conventional tools or development of new powered equipment, your General Electric Apparatus Sales Office can help you. Contact him early in your planning. General Electric Co., Schenectady 5, N. Y. 664-43

*Repetitive Manufacture.

Engineered Electrical Systems for Heavy Construction Tools

GENERAL ELECTRIC

Materials and Labor Prices

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- Wood Products, Glass, Explosives, Chemicals: Last, Mar 21; Next, Apr 18
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar 28; Next, Apr 25

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over,			STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over,			BRICK — Per M. in quantity		LIME — Per ton, in paper, Carload lot,		
	3x12x12 in.	4x12x12 in.	8x12x12 in.	8x12x12 in.	10x12x12 in.	12x12x12 in.	Common backing	Straight hard	Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$149.90p	$149.90p	$299.80p	$334.55p	.....	.....	$30.50p	$32.70p	$23.50	$24.50	$.....
Baltimore	203.00	217.00	406.00	495.50	596.00	681.00	36.00k	41.00k	33.00	22.00	.....
Birmingham	135.00p	152.00p	.....	303.00p	376.00p	465.00p	27.00ff	38.00gg	35.02	22.30	26.33
Boston	217.00†	231.00†	434.00†	520.50†	.....	.....	41.50p	46.50p	39.20†	31.20†	.....
Chicago	138.00	148.00	280.00	.....	.....	.....	30.00	32.00	38.00	35.20e	.....
Cincinnati	205.00j	225.00j	296.00jdd	213.00j	288.00j	314.00j	45.00j	46.00j	28.50j	24.25i	28.50j
Cleveland	209.00	223.00	.....	.....	.....	.....	43.00	47.00	31.00	26.00	.....
Dallas	.....	182.00	.....	.....	.....	.....	25.75	45.00	37.86	25.08	.....
Denver	.....	.....	.....	.....	.....	.....	36.00	47.50	34.80bb	28.00bb	34.00bb
Detroit	258.00	275.00	506.00	.....	616.80	704.80	44.00p	44.50p	38.00	30.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	33.00	33.00	40.00	38.00	34.00
Los Angeles	r	r	r	r	r	r	30.50§	.....	34.00	34.00	38.00
Minneapolis	188.00p	210.00p	429.00p	310.00pw	.....	.....	43.00*p	52.50ii	45.50bbe	35.50bbe	47.50bbde
Montreal	170.00aq	178.00au	325.00au	270.00	400.00	.....	42.00	49.00	39.00	22.00	13.25u
New Orleans	186.00	186.00	380.00	380.00	.....	.....	40.00	55.00	44.00	32.00	32.00
New York	158.10A	168.60A	231.70eA	233.90An	.....	.....	44.00	.....	37.00	35.00	.....
Philadelphia	156.30	166.80	312.70	375.20	.....	.....	30/34	34/40	27.60	25.60	3.17m
Pittsburgh	154.00	162.00	292.00	340.00	420.00	495.00	.....	.....	.....	.....	.....
St. Louis	179.00p	203.00p	358.00p	500.00p	.....	.....	43.00al	41.50a	0.95aaa	.80aaa	1.35az
San Francisco	156.85*	177.10*	235.30dd*	.....	.....	.....	42.50*	42.50*	27.75	27.75	30.50i
Seattle	225.00p	250.00p	450.00p	250.00pv	.....	.....	43.00a	57.00a	52.00abb	40.00bb	4.50mbb
Toronto	138.70	148.70	278.75	222.00f	.....	.....	25.00	63.00	36.00	33.50	31.00

*† F.o.b.yard Roxbury. *a Smooth. *b Per 50 lb. bags. *c 8 x 12 x 12 lg.-3 cell. tax extra. *r Not used because of earthquake danger. *s 2% discount for cash. *t 8½ x 8 x 11¼. *u Tax exempt. *v Sand lime. *w 8 x 8 x 12. *y Stacked. *d Pulverized hot. *e 5%, 10th following month. *f 8 x 8 x 12. *g 8½ x 8 x 12. *z Pebble lime price per 80 lb. sack. *aa Price per sack. Lime not sold per ton. *bb LCL. *h F.o.b. trucks, job site N.Y.C. *i 80¢ sacks. *j Truck load or over. *k $1.00 discount. *l Red face. *m Per bbl., 180 lb. *n 7½ x 7½ x 12. Speed tile. *dd 6 x 12 x 12. *ee Pebble lime. *ff 80% common. *gg Rough. $40.00 Smooth *o mason's double hydrated pressure. *p Truck lots. *q Provincial and Municipal *ii Chi common. § F.o.b. yard. **F.o.b. plant Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry a	WHITE LEAD Per 100 lb. in 100 lb. cases In oil w	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 300 lb. bbl. per ton
Atlanta	$19.25	$28.275	$3.50	$3.86	$3.31	$3.39	$2.20	$2.62	$0.67	$57.75
Baltimore	19.00	27.90	2.75	4.25	3.35	2.78	4.25	4.25	.48	50.18
Birmingham	19.25	28.275	3.90	3.40	....	3.31	2.51ii	2.51ii	.87ff	48.00ee
Boston	19.00	27.90	....	....	....	3.20g q	2.83eg	2.83eg	.50g	56.00g
Chicago	19.00	27.90	....	....	....	3.45‡u	2.86‡e	2.89‡s	45.80‡bbv	55.70‡
Cincinnati	19.00	27.90	....	....	....	3.11	2.36	2.39	.594y	52.36
Cleveland	19.00	27.90	2.829pqq	2.5047gg	2.8485gg	3.10q	2.50e	2.50e	.454y	47.00AA
Dallas	19.25	28.65	....	3.13B	....	3.00u	3.00e	3.00e	.464	55.00AA
Denver	19.50	28.40	3.29	5.15	3.04	3.11	2.30e	2.45e	.48ff	47.00
Detroit	19.00	27.90	3.35	3.35	3.50	3.10	2.50f	2.409f	.584ff	47.30
Kansas City	19.00	28.65	3.82	3.28	2.90	3.90ii	3.95e	3.95e	.66y	94.44
Los Angeles	19.00	28.15	3.30n	4.50n	4.20n	3.20n	2.15en	l	.70ay	l
Minneapolis	19.00	29.85/28.02	....	....	....	2.81dd	2.47iidd	2.47iidd	.523iidd	48.00r
Montreal	.....	21.95	5.02Dft	5.94Eft	4.65Fft	5.25	4.65f	4.65f	1.60	
New Orleans	.....	.....	....	....	....	2.74	2.18	2.43	0.689	
New York	19.00	27.90	....	....	....	2.96	2.33o	2.33o	.421s	48.00*
Philadelphia	19.00	27.90	3.60	3.40/3.65	3.60/4.60	2.75/3.00	2.94	2.94	45	48.00
Pittsburgh	19.00	27.90	3.10	3.38	3.68	3.72	2.85e	2.85e	42	58.75
St. Louis	19.00	27.90	....	....	....	3.50iix	3.75k	3.75k	44y	54.50
San Francisco	19.00	28.15	3.05	4.25	3.50	2.60	2.06qa	3.10j	.47jy	54.00
Seattle	19.00	28.40	3.47mee	4.19mee	....	3.72mqee	3.22kmee	....	.54mee	47.20ee
Toronto	.....	.....	....	....	....	4.45	4.10e	4.65e	1.70j	88.00A

*‡ Delivered. * Note: Red lead in oil 50¢ higher than white lead in oil. *a Red lead prices change frequently due to pig lead price changes. *b U. S. War Dept. Spec 3-49A. *c ASTM Spec. D266-31. *d 80% minimum ferric oxide. *e 15 lb. *f Per 432 sq. ft. *g F.o.b.yard, Roxbury. *h Per roll, 85 lb. *i Net carload lot prices: Minneapolis and vicinity. *j 45 gal containers. *k Per cwt. *l Not used. *m 1% discount for cash. *n F.o.b. city. *o Per 60-lb. roll. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Federal tax included, add 5% mun. & prov. tax. *u Per 90-lb. square. *v Per ton. *w Price to contractors $1.25 less. *x Mineral surfaced. *y 55-gallon container. *z Drums. *aa 15 lb., 324 sq ft roll. *bb Roofers coating and cement: Price per ton. *cc LCL, truck delivery. *dd 2% cash discount. *ee Asphalt pitch in 100 lb. package. *ff 5-gal. drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per roll. *jj Asbestos roof coating. *A 400 lb barrels. *B ASTM Spec D-962-49. *D Std. Black. *E Ready-mixed. *F Over 80% ferric oxide. *' Aver. wt. approx. 425 to 550 lbs. drums.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡		VERMICULITE‡			PERLITE‡		ALUMINUM SHEET††		STAINLESS STEEL† SHEET-TYPE 302g		COPPER WATER* TUBING-TYPE L 2000 ft lots per ft	
	Neat per ton	Gauging per ton	Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	Plaster Aggregate	Concrete Aggregate Untreated	Flat .102" th 36"x96" & 48"x144"	Corr roof .032" th 35"x12'	20 ga 48"x96] 20' per cwtlh	28 ga 36"x120' per cwtmm	½"b	½"c
			per bag of 4 cu ft					per lbjt	per qhu				
Atlanta	$31.00	$36.00	$1.55s	$1.65s	$1.80al	$1.65	$1.65	$0.424n	$6.57n	$61.44n	$67.50n	$16.74f	$23.41f
Baltimore	22.85	33.25	0.95	1.15	1.15	1.15	1.65	0.391	0.427r	56.25	64.25	0.1951	0.2745
Birmingham	33.00	39.00	1.55	1.55	1.80l	1.55	1.55	0.475	10.02	62.26	70.76	0.2025	0.2464
Boston	22.00	30.00	1.40	1.40	1.45	1.45	1.50	0.505	28.56op	62.873dd	69.01ddff	0.1674	0.2341
Chicago	26.80	26.80	1.55	1.60	1.60l	1.50	1.50	0.474	9.805ap	62.65aee	71.15aee	0.1674	0.2341
Cincinnati	28.00*	28.00*	1.75	1.75	1.75	1.85	1.90	0.434	9.58	65.18	78.68ff	0.1720	0.2097
Cleveland	28.00	43.00	1.15ii	1.15ii	1.24l	1.45	1.45	0.44aa	8.65	65.08	73.58	17.68f	24.77f
Dallas	29.80	31.80	1.05	1.21	1.37l	1.21	1.32	0.379	0.439r	55.00	63.00	0.200	0.2810
Denver	25.00	25.00	1.50	1.40	1.50	1.40	1.50	0.444	9.80	60.19gg	70.69gg	0.2006	0.2810
Detroit	25.00	25.00	1.28	1.32	1.41	1.55	1.55	0.455a	9.235a	65.00a	73.50a	16.74foe	26.56f
Kansas City	30.00	35.00	1.25	1.35	1.50	1.40	1.60	0.451	10.95	67.14	75.81	18.99f	26.56f
Los Angeles	26.20	27.20	1.25ia	1.15k	1.25			0.484	9.96d	62.45	72.95	0.1946	0.2729
Minneapolis	32.00	32.00	1.50	1.60	1.80	1.40	1.40	0.481		65.45	78.96ff	0.1770	0.2409
Montreal	27.60	35.60	1.20	1.40	1.50	1.15e	1.15e	0.437	9.25	66.50		0.228	0.287
New Orleans	32.00	45.00	1.25	1.25	1.35	1.25	1.25	0.422	8.303	62.04	70.54	0.1214	0.2768
New York	24.00	30.00	1.30	1.25	1.45	1.30	1.30	0.474ao	9.46ad	65.70	74.20	16.74f	23.41f
Philadelphia	23.25	32.00	1.35	1.35	1.40			26.50qer	7.50a	53.23a	60.98a	18.57f	26.09f
Pittsburgh	27.50	31.00	1.30	1.30	1.32	1.35	1.35	0.42	9.19	56.81	62.63	0.2045	0.2572
St. Louis	29.00	40.00	1.35	1.60jj	1.55	1.60	1.65	0.434	9.80	68.11	74.36	16.74fm	23.41fm
San Francisco	27.85	32.00	1.20	1.20	1.40	1.20	1.40	0.49	8.90	66.99	75.47	0.1674	0.2341
Seattle	40.00	43.00	1.45	1.25k	1.85l	1.50k		0.422	8.303	63.00	83.00	0.1674	0.2341
Toronto	28.50	46.50	1.20	1.30	1.45			0.4215	24.00ae	73.75	86.50	0.2835pp	0.3424pp

‡ trucklots, delivered † fob warehouse * fob city *a delivered *b ½" O.D. *c ⅝" O.D. *d 0.100"th *e 36" x 60" sheet *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled: 2B finish *h 15M lb lots *j 1100 & 3003 alloy, mill finish *k per bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob mill, fr allow *o 5M lb & up *p 100 sq ft quantity *r per lb *s 30# bag *t 36" x 96": 10.81 lb/sh; 48" x 144": 21.7 lb/sh *u 19.31 lb/sh *v fob plant *w 48" x 144" *x $13.25 per 36" x 96" sheet *aa 16M lb & up *dd add $0.75 cwt for boxing *ee 4 tons & up *ff 26 ga *gg add $2/cwt boxing: $0.75/cwt on skids *hh Theoretical wt for 48" x 96": 60.4-lb. per sh. *ii 300-bag lots *jj per 100-lb bag *mm Theoretical wt: 19.7-lb per sh. *pp Incl 10% sales tax

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready-mixed Concrete, Asphalt: Last, Mar 7; Next Apr 4
- Iron and Steel Products, Pipe: Last, Mar 14; Apr 11
- Wood Products, Glass, Explosives, Chemicals: Last, Mar 21; Next, Apr 18
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar 28; Next, Apr 25

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	¾" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION† loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION† loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL 80¢ Kraft Expansible 1 side foil per roll of 250 s. f.	2 layers foil per Msq. ft	Blanket
Atlanta	$70.00	$80.00	$43.00	$70.00	$70.00	$127.00	$70.00	$1.00	$80.00	$2.00[b]	$75.00	----	----	
Baltimore	81.25[f]	44.75[f]	32.55[f]	55.00[f]	85.00[f]	108.50[f]	69.00[f]	1.30	88.50	1.80	85.00	$4.00[g]	$33.80	
Birmingham	73.00	80.00	47.77	75.00	82.00	136.50	81.00	1.40	70.00	1.80	75.00	3.13[g]	----	
Boston	80.00[m]	50.00[m]	36.00[m]	60.00[m]	85.00[m]	120.00[m]	79.00[kk]	1.45	75.00	----	80.00	6.00	55.80	
Chicago	87.00	52.00	43.00	82.00	87.00	125.00	87.00	1.85	90.00	----	82/85[kk]	5.25[z]	----	
Cincinnati	47.40[w]	42.35[w]	31.55[w]	50.55[w]	70.00[w]	125.00[w]	72.50[w]	1.25	80.00	1.25	73.50	3.12[j]	50.00[w]	
Cleveland	80.50	55.00	40.00	65.00	74.00	130.00	80.00	1.35/1.50	75.00	1.80[oo]	80.75[oo]	17.50[o]	80/85	
Dallas	58.00	55.00	42.50	65.00	73.50	122.50	70.00	1.90	85.00	1.35	85.83	4.25	----	
Denver	82.00	54.50	41.00	62.00	75.90	126.00	74.90	----	71.00[j]	1.35[q]	85.00	11.00[r]	31.00	
Detroit	59.00	49.50	36.00	61.00	59.50	90.00	59.00	----	----	1.95[kk]	83.00	----	----	
Kansas City	58.00	55.00	40.00	65.00	72.00	120.00	78.00	1.40	80.00	1.40	80.00	11.34[dd]	19.44	
Los Angeles	64.00	59.00	0.23[ss]	66.50	71.87	121.25	80.00	----	83.00	1.35[s]	84.00	6.20[g]	----	
Minneapolis	80.00	70.00	0.40[s]	80.00	70.00	140.00	78.00	1.60	80.00	1.80	80.00	6.00	----	
Montreal	56.00	47.40	36/39	53.00	63.25	----	63.00	1.30	54.00	1.30	54.00	16.20[s]	56.00	
New Orleans	57.00	48.00	45.00	60.00	75.00	125.00	72.50	1.75	68.00[aa]	----	----	----	----	
New York	53.00	45.50	35.00	54.00	74.50	118.00	73.50	1.55	65.00	1.90[t]	67.00	5.20	43.80[w]	
Philadelphia	50.00	48.00	34.00	48.50	67.50	105.00	55/60	----	63/70	----	70/75	5.60/6.34	34.80/44.80	
Pittsburgh	65.00	55.00	40.00	68.00	65.00	105.00	60.00	1.90	72.00	1.90	73.00	4.10	----	
St. Louis	65.00	55.00	39.00	70.00	75.00	120.00	80.00	1.35	85.00	1.85	70.50	5.85[s]	----	
San Francisco	54.00	46.00	0.35[s]	57.00	65.00	106.00	64.00	1.80	66.50	1.80	66.50	4.95	55.00	
Seattle	66.00	57.50	46.50	65.00	74.50	125.00	73.50	1.60[y]	74.00	1.80[aa]	80.00[aa]	4.25[g]	46.80	
Toronto	61.00	50.00	38.00	64.50	75.00	----	----	1.40	60.00	----	----	16.00[g]	45.45	

[a] for hand packing [b] per 30# bag [d] 40# kraft paper [e] 20# sq ft bag, 4" thick [f] full trailer loads [g] 80# kraft paper backing [h] LCL [i] 40 lb roll [j] 80 lb roll [l] flame-proof $75.00 [m] 10 ton quantities [n] distributor's siding [o] per Msf roll [p] per sf [r] per cwt [s] per 35# bag [t] per M sq ft [w] fob city [x] per sq. yd. [y] 28# bag [z] 32# bag [aa] fob warehouse [bb] 2" [cc] in 250 sf rolls, of 18", 20", or 24" width.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const
Atlanta	$3.35	$2.80	$3.05	$2.80	$3.00	$3.20	$3.20	$1.45	$1.45
Baltimore	3.45+10¢[d]	2.95+7½¢[t]	3.50+7½¢[t]	2.70/2.95+10¢[d]	3.25+7½¢[t]	3.30	3.20+7½¢[t]	1.80+7½¢[t]	1.80+7½¢[t]
Birmingham	3.50	2.70	3.00+7½¢[h]	2.52	2.92	3.175	3.25+10¢[n]	1.50	1.60
Boston	3.50+10¢[d]	3.05+10¢[d]	3.55+7½¢[h]	3.55	3.50+20¢[f]	3.30+12¢[n]	3.20+10¢[c]	2.30+7¢[f]	2.30+7¢[f]
Chicago	3.62½+7½¢[h]	3.35+10¢[c]	3.55+7½¢[h]	3.25+5¢[m]	3.54+23¢[n]	3.48+21¢[f]	3.37+22¢[n]	2.57½+7½¢[h]	2.57½+7½¢[h]
Cincinnati	3.80	3.30	3.55+7½¢[h]	3.075/3.325	3.375	3.50+3¢[w]	3.50+9½¢[z]	2.35	2.25
Cleveland	3.55+10[x]	3.575	3.50+7½¢[h]	3.575	3.575	3.60	3.375+10¢[c]	2.825	2.75
Dallas	3.70	2.95	3.121+½[h]	3.075	3.50+7½¢[h]	3.12½+7½¢[h]	3.10+7½¢[h]	1.55	1.55
Denver	3.75	3.075	3.10+7½¢[c]	2.95	3.30+7½¢[c]	3.00	3.17+15¢[ll]	2.10	2.10
Detroit	3.53+20¢[ww]	3.20+29¢[s]	3.47½+20¢[f]	3.20+20¢[vvv]	3.51+24¢[vv]	3.50+30½¢[ff]	3.45+14¢[ff]	2.45+20¢[vvv]	2.55+10¢[v]
Kansas City	3.75	2.95	3.10	3.095	3.375	3.325[ff]	3.40+7½¢[h]	2.155	2.18
Los Angeles	3.80	3.00+10¢[d]	3.40+10¢[c]	2.95+10¢[d]	3.75+12½¢[ff]	3.60	3.55+10¢[d]	2.30+7½¢[h]	2.30+7½¢[h]
Minneapolis	3.425	3.00	3.17	2.95	3.10+23½¢[n]	3.12[m]	3.065+20¢[n]	2.25	2.25
New Orleans	3.25+5¢[m]	2.725	3.10+7½¢[h]	2.85+7½¢[h]	2.87½+5¢[m]	3.025+7½¢[h]	3.15+15¢[c]	1.55	1.55
New York	4.25+37½¢[h]	3.75+30¢[h]	4.15+ 24½¢[c]	4.00+32¢[v]	4.00+50¢[s]	3.65+40¢[ee]	3.95+35½¢[ee]	2.65+21¢[r]	2.65+21¢[r]
Philadelphia	3.75+17¢[t]	3.385	3.80+18¢[ff]	3.154/3.904+10¢[d]	3.65+15¢[c]	3.77+15¢[vv]	3.75+11¢[c]	2.10	2.40
Pittsburgh	3.75+17½¢[o]	3.40+7½¢[h]	3.55+10¢[cc]	3.35+7½¢[h]	3.45+17½¢[ee]	4.00+7½¢[m]	3.425+7½¢[h]	2.25+12½¢[ff]	1.98+10¢[c]
St. Louis	3.75+28½¢[c]	3.25+7½¢[h]	3.25+7½¢[h]	3.325	3.55+7½¢[h]	3.60+25¢[c]	3.55+21¢[ff]	2.30+7½¢[h]	2.30+7½¢[h]
San Francisco	3.75+36½¢[dd]	3.25½+20¢[s]	3.40+10¢[c]	2.98+10¢[s]	3.61+20¢[vv]	3.37½+23¢[ff]	3.45+46¢[ff]	2.325+10¢[s]	2.325+10¢[s]
Seattle	3.55+10¢[d]	2.94+10¢[d]	3.25+10¢[d]	3.13+20¢[d]	3.40+10¢[d]	3.25+19½¢[ff]	3.40+21¢[ff]	2.51+10¢[d]	2.51+10¢[d]
Montreal	2.20+16¢[t]	2.00+16¢[t]	2.15+16¢[t]	1.90+15¢[t]	2.22+18¢[t]	2.20+18¢[t]	2.22+18¢[t]	1.40+10¢[t]	1.40+10¢[t]
Toronto	2.66+10¢[vv]	2.45+10¢[vv]	2.40+10¢[vv]	2.55+10¢[vv]	2.45+18¢[vv]	2.65+10¢[vv]	2.44+10¢[vv]	1.50+8¢[vv]	1.50+8¢[vv]

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.464. **ENR Common Average** $2.225

[c] Cost of living bonus now included in basic wage. [f] 8% fringe benefits. [g] 4% vacation fund. [h] 6 hr. day. [j] 7 hr. day. [k] 8% vac. stamp fund plus 10¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. [l] 10¢ H&WF. [m] 10¢ VF. [n] 6% WF. [o] 11½¢ WF. [p] $2.85 homes & housing plus 7½¢ WF. [q] 17¢ WF. [r] 10½¢ hr. WF. [s] 7½¢ hr. WF. [t] 14% VF. [u] 5¢ hr. WF. [v] Plus 11% fringe benefits on gross wage ea. yr. [w] 10¢ PF. [x] 3% WF, 3% PF. [y] 10¢ ins; 6% vac. and holi-day pay. [z] 4% WF and 20¢ PF. [aa] 5% W&PF, 4% VF, 1% NC, 6 PH. [bb] 7½¢ H&WF. [cc] 1½% PF. [dd] 10¢ WF. [ee] Negotiating. [ff] 5¢ VP. [gg] 23¢ WF. [hh] 5¢ HP. [ii] A 15¢ WF, 15¢ PF, 20¢ BF. [jj] 7½¢ VP, 5¢ PF, 1% EF. [kk] 15¢ WF. [ll] D 10¢ H&WF, 5¢ organ. [mm] 8% WF, plus travel pay per day. [nn] Plus $4 per day Annuity contrib. [oo] 3¢ Prom. [pp] 7¢ WF, 6% VF. [qq] 15¢ H&WF, 5¢ for Advtg. [rr] 5% WF, 6 PH, 3% PF. [ss] 5¢ WF & PF, 15¢ VF. [tt] 3% WF, 3% PF, 2% VF, 1% EF. [uu] M 7½¢ PF. [vv] 1% WF. [ww] 10¢ W, 1% NECA. [xx] 10¢ hosp. ins.; 5¢ PF, 5¢ VF. [yy] 1 drum, 2 drums 3.40 3.55 + 10¢. [zz] 10¢ H & WF, 2¢ admin. and 1¢ apprentice. [aaa] 12¢ H and WF. [bbb] 21¢ H, W & VF. [ccc] 7½¢ WF, 4% VF, 1% PF. [ddd] 5% WF, 3% PF. [eee] 2% F. [fff] 12¢ VF, & 7½¢ H & WF. [ggg] 7¢ H & WF. [hhh] 9½¢ WF. [iii] 7¢ WF, 15¢ PF. [jjj] 8¢ WF. [kkk] 12½¢ WF, 14¢ PF, 5¢ Jt Bd 5¢ Prom. [lll] 7½¢ FB. [mmm] 7½¢ ins. [nnn] 10¢ ins.

	Truck drivers 1½ T	—4 cy	+4 cy	Tractor Operators—incl. bulldozers— 34-49 hp	70-100 hp	100 & over	Tractor scraper 16-18 cy	Power cranes & shovels— ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$1.75	$	$	$2.525	$2.525	$2.525	$2.525	$3.05	$3.05	$2.525	$2.30	$1.87
Baltimore	1.80+7½¢[m]	1.75+7½¢[m]	1.85+7½¢[m]	2.85/3.30[s]	2.85/3.30[s]	2.85/3.30[s]	2.85/3.30[s]	3.40/3.55+10¢[m]	3.40/3.55+10¢[m]	2.85/3.30[s]	2.85/3.30[s]	2.25
Birmingham	1.80	1.75[ff]	2.05[ee]	2.66	2.66	2.66	2.80	2.80	2.80	2.76	2.385	1.75
Boston	2.195[c]	----	----	3.025[d]	3.025[d]	3.025[d]	3.025[d]	3.40	3.40	3.05	2.48+7¢[n]	
Chicago	2.16+12½¢[ccc]	----	----	3.00+5¢[m]	3.15+5¢[m]	3.05+5¢[m]	2.85+5¢[m]	3.80+5¢[m]	3.80+5¢[m]	2.95+5¢[m]	2.95+5¢[m]	
Cincinnati	2.20[oo]	2.30[oo]	2.40[oo]	3.075	3.075	3.075	3.075	3.325	3.325	3.225	3.225	3.225
Cleveland	2.50+10¢[m]	2.50+10¢[m]	2.50+10¢[m]	3.325	3.325	3.325	3.325	3.575	3.575	3.525	3.20	3.20
Dallas	1.55	1.55	1.55	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.625[d]	1.55/2.00[d]	1.70/2.00[d]
Denver	2.20	2.30	2.45	2.20	2.80	2.80	2.80	2.95	2.95	2.80	2.80	2.40
Detroit	2.45	2.45	2.45	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.025+10¢[m]	2.88+20¢[vvv]
Kansas City	2.115[s]	2.115[s]	2.19[s]	2.30	2.85[s]	2.85[s]	2.85[s]	3.095	3.095	2.71	2.85[s]	2.24
Los Angeles	2.605+7½¢[s]	2.605+7½¢[s]	2.435+7½¢[s]	3.05+10¢[m]	3.05+10¢[m]	3.05+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	3.30+10¢[m]	2.54+10¢[m]	2.51+7½¢[c]
Minneapolis	2.25	2.25[g]	2.40[c]	2.78	3.00[c]	3.07[c]	3.00	3.22[v]	3.48[c]	2.78	2.67	2.38
New Orleans	1.70	1.95	1.95	2.20+7½¢[u]	2.85+7½¢[u]	2.85+7½¢[u]	2.85+7½¢[u]	2.85+7½¢[u]	2.85+7½¢[u]	2.85+7½¢[u]	2.20+7½¢[u]	1.65
New York	2.21[aa]	2.75+14½[hh]	2.75+14½[hh]	3.37½+27¢[h]	3.37½+27¢[h]	3.37½+27¢[h]	3.50+28¢[h]	4.25+34¢[h]	4.25+34¢[h]	3.50+28¢[h]	3.50+28¢[h]	3.00+18¢[vv]
Philadelphia	----	1.925/2.15+7½¢[m]	----	----	3.15½/3.90½+10¢[m]	----	3.15½/3.90½+10¢[m]	----	3.15½/3.90½+10¢[m]	3.15½/3.90½+10¢[m]	2.97½+10¢[m]	2.13½+10¢[m]
Pittsburgh	2.20+7½¢[m]	2.20+7½¢[m]	2.20+7½¢[m]	2.87½+7½¢[m]	3.20+7½¢[m]	3.27½+7½¢[m]	3.025+7½¢[m]	3.35+7½¢[m]	3.35+7½¢[m]	3.25+7½¢[m]	3.35+7½¢[m]	2.20+7½¢[m]
St. Louis	2.30+7½¢[mmm]	----	----	3.325[kkk]	3.325[kkk]	3.325[kkk]	3.325[kkk]	3.325[kkk]	3.325[kkk]	3.325[kkk]	2.775[kkk]	2.775[kkk]
San Francisco	2.324+10¢[s]	2.324+10¢[s]	2.465+10¢[s]	3.095+10¢[m]	3.095+10¢[m]	3.095+10¢[m]	3.095+10¢[m]	3.425+10¢[m]	3.425+10¢[m]	3.255+10¢[m]	2.705+10¢[m]	2.425+10¢[m]
Seattle	2.63+7½¢[mm]	2.63+7½¢[mm]	2.83+7½¢[mm]	3.10+20¢[ll]	3.10+20¢[ll]	3.10+20¢[ll]	3.10+20¢[ll]	3.45+20¢[ll]	3.45+20¢[ll]	3.19+20¢[ll]	2.85+20¢[ll]	2.71+10¢[m]
Montreal	1.40+11¢[ll]	1.40+11¢[ll]	1.40+11¢[ll]	1.83+15¢[ll]	1.83+15¢[ll]	1.83+15¢[ll]	1.83+15¢[ll]	2.09+16¢[ll]	2.09+16¢[ll]	1.83+15¢[ll]	1.80+15¢[ll]	1.70+15¢[ll]
Toronto	1.53+6¢[vv]	1.53+6¢[vv]	1.50+6¢[vv]	1.95+10¢[vv]	2.05+10¢[vv]	2.05+10¢[vv]	2.05+10¢[vv]	2.55+16¢[vv]	2.55+16¢[vv]	----	2.10+6¢[vv]	2.10+6¢[vv]

[a] 5¢ hr. H&WF [b] lower rates, straight time, other broken [c] 2-axle; 10-wheel $2.25; Euclid $2.45 [d] intermediate [e] bldg constr; highway $2.55+7¢WF [f] less than 2-T [g] up to 6 cy [h] 4% WF, 4% PF [i] 6-8 cy [j] plus $2 pd by employer for hosp. death benefits to family [k] bldg constr; steel constr $3.475 [l] higher rates are union, other taken from min wage scale approved by County Commissioners Court [m] 10¢ H&WF [n] flatbed [o] under 10 cy [p] over 10 cy [q] over 80 hp [r] blade grader [s] single [t] 7½¢ H&WF [u] cat oper [v] up to 3½ cy [w] 3½ cy & over [aa] plus W & PF [bb] 3% WF, 2% PF, 11PH [dd] up to 5 cy [ee] 5 cy & over [ff] over 1½ T but not over 3 [gg] up to 5 tons [hh] excavating [ii] 4% VF [kk] 7½¢ WF included in base pay [ll] 8% fringe benefits [mm] 10¢ H&WF, 10¢ insurance [nn] 8 cy or less; 8-18 cy $2.90; 16-25 cy $3.15 [oo] Plus $2.25 wk WF [rr] 12¢ WF [ss] 5% WF [tt] 10¢ H&WF, 10¢ PF

MEXICO CITY PRICES

In Pesos, F.o.b. City		Feb. '57	Mar. '57
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.48	2.48
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.48	2.48
Struct. Iron Workers (8 hr. day)....Remachadores.	av. per hr.	3.77	3.77
Struct. Steel, Shapet 3"-18" x 12 meters....per metric ton		2100.00[f]	2100.00[f]
# fob Monterrey			
Reinf. Steel, Corr. Rods ⅜" x 11 meters	per ton	1965.00	2000.00
½" x 11 meters	per ton	1965.00	2000.00
⅝" x 11 meters	per ton	1965.00	2000.00
¾" x 11 meters	per ton	1965.00	2000.00
⅞" x 11 meters	per ton	1965.00	2000.00
1" x 11 meters	per ton	1965.00	2000.00
Gravel truck load at 3½ cu. meters		Feb. '57	Mar. '57
Blue Gravel	per tr. load	75.00	75.00
Rose Gravel	per tr. load	73.00	73.00
Cement, Std. Port. (Tolteca)	per ton	240.00	240.00
Lumber 1" Pine	per M ft.	1200.00	1400.00
1½" Pine	per M ft.	1500.00	1650.00

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Brockton**—SCHOOL—BA 4/2—City, City Hall, East Junior High School, off Cary St., $1,500,000. Plans deposit $70, refundable. J. Williams Beal Sons, 185 Devonshire St., Boston, archts. CD 12/22/55.

BUILDINGS—LB & CA

▲ **Daniel O'Connells Sons, Inc.**, 480 Hampden St., Holyoke, Mass. LB $1,510,618. REGIONAL HIGH SCHOOL, ATHOL, MASS. Athol-Royalston Regional School Dist., c/o supt. Schools, Town Hall, Athol, Mass. Bids Mar. 14. CD 2/19.

▲ **Swanson-Janson Co.**, 82 Foster St., Worcester, Mass. LB Approx. $2,000,000. CENTRAL SERVICE BLDG. New Bond and "C" Sts., WORCESTER, MASS. Norton Co., 1 New Bond St., Worcester, Mass. Bids Mar. 8. CD 3/7.

▲ **Maguire Homes, Inc.**, 57 Sudbury St., Boston, Mass., CA $1,052,940. Capehart family HOUSING on site imprvs. and utilities, ENG-19-016-57-17, Bristol North Kingston, Foster, north Smithfield and Coventry, RHODE ISLAND. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Jan. 25. CD 1/3, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **N. Y., Manorville**—AIR CONDITIONING CHANGES—BA On Or About 4/4—U. S. Eng., 111 E. 16 St., New York, Zone 3, air conditioning changes in the operations bldg. at various sites and fuel system changes, ENG-30-075-57-367. Plans deposit $5.

▲ **New York**—BA 4/9—The Power Authority of the State of New York, 270 Broadway, New York, constr. bridges on State Hy. Rte. 345 and Franklin Rd. in Waddington, St. Lawrence Co., Spec. No. PA-5-11025, St. Lawrence Contr. No. 33. Plans deposit $10. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/18/54.

Pa., Carlisle—BA 4/9—Boro Sewer System Auth., Boro Hall, sewage treatment works, appurtenances and services. Contr. 1, general constr., Contr. 2, plumbing work, Contr. 3, heating (ventilating) work, Contr. 4, electrical work. $900,000. Plans deposit $50. Glace & Glace, Inc., 1001 N. Front St., Harrisburg, engr. CD 3/5.

BUILDINGS—BA

▲ **Pa., North Allentown**—SCHOOL—BA 4/1—Northampton Area Joint School Bd., North Allentown, 1 story, brick, steel Senior High School, Northampton. $2,000,000. Quentine H. Bowers, Second National Bank Bldg., Wilkes Barre, engr.

▲ **N. Y., Brooklyn**—LIBRARY—BA 4/30—Brooklyn College, Bd. Higher Educ., Office of the Business Manager, Boylan Hall, Bedford Ave. and Ave. H, Zone 10, general constr., plumbing work, heating and ventilating work, electrical work Brooklyn College Library extension on Campus of Brooklyn College, Bedford Ave. and Ave. H. Plans deposit $60. CD 1/7/54.

▲ **Del., Wilmington**—HIGH SCHOOL—BA 5/22—Alfred I. DuPont Special School Dist., 3606 Concord Pike, high school. $3,000,000. Whiteside, Maeckel & Carbonell, 909 Tatnall St., archts. Louis H. Doane, Penna R. R. Bldg., engr. CD 11/14.

HEAVY CONSTRUCTION—LB & CA

▲† **John L. Washbourne, Inc.**, 18 E. 41 St., New York 17, N. Y. LB $1,194,800. (5 bidders) ammunition storage facilities ADC type (FY 1957 Program), Griffiss Air Force Base, ENG-30-075-57-312, ROME N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Mar. 14. CD 3/5.

▲† **Hendrickson Bros., Inc.**, 63 N. Central Ave., Valley Stream, N. Y. LB $1,939,203. (7 bidders) runway exten., hazard removal FY 1957, Suffolk County Air Force Base, ENG-30-075-57-340, WESTHAMPTON BEACH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Mar. 14. CD 2/13.

▲ **PENNSYLVANIA AND NEW JERSEY**—Pennsylvania R. R. Co., C. J. Henry, ch. engr., Suburban Station Bldg., 1617 Pennsylvania Blvd., Phila. 4, Pa.

John F. Casey Co., Aspinwall, Pittsburgh, Pa. CA $2,076,980. railroad bridge: substructure alterations, Phila., Phila. Co., Pa., and Delair, Camden Co., N. J. CD 3/5, under LB.

General Asphalt Paving Co., 6851 Rising Sun Ave., Phila., Pa. CA $216,823. Bids 2754 and 2753, water mains, PHILA., PA. City, Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Feb. 28. CD 2/14.

MARYLAND—State Rds. Comm., 108 E. Lexington St., Baltimore, Zone 2,

Somerset Constr. Co., 631 Regester Ave., Baltimore 12, Md. LB $565,508. (4 bidders) 2 dual multiple span steel beam bridges, Hagerstown By-Pass over P.R.R. and Morganville Rd., Contrs. W-446-5-620, Washington Co. Bids Mar. 12. CD 2/28.

BUILDINGS—LB & CA

▲ **Avella Constr. Co.**, Vestal, N. Y. LB $555,400. Raymond Avenue Elementary SCHOOL. LB $546,200. Wheeler Avenue Elementary SCHOOL, CORTLAND, N. Y. Bd. Educ., Cortland, N. Y. Carl W. Clark, 625 James St., Syracuse, N. Y., archt. CD 9/27.

Knollwood Park Homes, c/o Murray J. Landman & Assoc., 2011 Central Park Ave., Yonkers, N. Y., Owner Builds. $500,000. 25 HOUSES on tract on Chester Ave. near Hartsdale Rd., GREENBURGH, N. Y.

▲ **C. Rolland Oswald**, 21 John St., Schenectady, N. Y. LB $520,000. Elementary SCHOOL, Alco; LB $524,000. Elementary SCHOOL, Haverstock; $520,000. Elementary SCHOOL, Nightingale, MASSENA, N. Y. Massena Central School Dist. No. 1, Messena, N. Y. Bids Mar. 1. CD 7/20, under LB.

Diesel Constr. Co., 625 Madison Ave., New York, N. Y. CA Est. $600,000. 5 story OFFICE, 9-15 Dutch St., NEW YORK, N. Y. Clarson Co., 24 W. 58 St., New York 19, N. Y. Emery Roth & Sons, 575 Madison Ave., New York 22, N. Y., archts.

▲ **Turner Constr. Co.**, 150 E. 42 St., New York 17, N. Y. CA Est. $5,000,000. 27 story OFFICE, air-conditioned, to be known as 730 Third Avenue, west side of Third Ave. between 45 and 46 Sts., NEW YORK, N. Y. Central Third Corp., c/o Carson & Lundin, archts., 50 Rockefeller Plaza, New York 20, N. Y. CD 8/8.

▲ **John W. Cowper Co., Inc.**, 775 Main St., Buffalo, N. Y. LB $1,132,700 (7 bidders) general constr. Indian River Central Junior Senior HIGH SCHOOL, PHILADELPHIA, N. Y. Bd. Educ., Indian River Central School Dist., Philadelphia, N. Y. Bids Mar. 8. CD 3/5.

▲ **Vincent S. Smith, Inc.**, P. O. Box 551, Binghamton, N. Y. CA $1,444,130. FACTORY and OFFICE, VESTAL, N. Y. General Aniline & Film Corp., Vestal, N. Y. CD 1/16, under LB.

Sharon Homes, Inc., 6510 N. Lawnton Ave., Phila., Pa., Separate Contracts, $420,000. RESIDENTIAL DEVELOPMENT, Camden Area, CAMDEN, N. J.

▲ **Fister Constr. Co.**, 345 N. Georgia Ave., Atlantic City, N. J. CA $1,138,149. general constr. 4 story, 90,000 sq. ft. stone, brick, block county OFFICE, MOUNT HOLLY, N. J. Bd. Freeholders Burlington Co., Mount Holly, N. J. CD 2/19, under LB.

▲ **A. Kessler**, 39 E. Main St., Moorestown, Pa., Separate Contracts, $3,000,000. RESIDENTIAL DEVELOPMENT, Rt. 130 and W. Albany Rd., PALMYRA, N. J. S. Zel Bender, 126 N. 6 St., Camden, N. J., archt.

Ted DeMario, c/o John M. Gabriel, 234 State Hy. 1, Paramus, N. J. Owner Builds. $700,000. 30 HOUSES, Foothills Development, Rte. 23 off Mountain Ave., POMPTON PLAINS, N. J.

▲ **The Austin Co.**, 450 West First Ave., Roselle, N. J. CA Est. $15,000,000. Design and construct TUBE MILL for copper and brass tube production, SOUTH BRUNSWICK, N. J. Phelps Dodge Copper Products Corp., 300 Park Ave., New York, N. Y.

▲ **Spring Builders**, 1018 Stuyvesant Ave., Union, N. J. Owner Builds. $1,400,000. 45 addnl. HOMES in Woodside Homes Development, SPRINGFIELD, N. J. Rotwein & Black, 1018 Stuyvesant Ave., Union, N. J., archts.

Crest View Inn Homes, 514 Hoover Ave., West Orange, N. J. Owner Builds. $700,000. 25 HOMES, Hoover and Pleasant Valley Ave., Pleasantville Section, WEST ORANGE, N. J.

M & L Constr. Co., 108 S. 40 St., Phila. Pa. LB $888,888. general constr. JUNIOR HIGH SCHOOL, sewage disposal plant, paving, Willistown, BERWYN, PA. Paoli Area High School Dist., Berwyn, Pa. CD 1/16.

Daniel B. Van Campen Corp., 1420 Walnut St., Phila., Pa. CA $409,995. general constr. George Taylor Elementary SCHOOL, BRISTOL, PA. Bristol Twp. School Dist., Rodgers Rd., Bristol, Pa. CD 3/1/56.

▲ **School Dist.**, Ninth and Crosby Sts., Chester, Pa. rejected bids Feb. 5, JUNIOR HIGH SCHOOL addns., alterations, from Clayton Elementary School, CHESTER, PA. LB $1,198,760. Project postponed. CD 2/26, under LB.

Penrose & Farrell, First Federal Savings & Loan Bldg., Upper Darby, Pa. Separate Contracts. $871,200. RESIDENTIAL DEVELOPMENT, 66 units, 23 St., CHESTER, PA. Erlin Wenge, McClatchy Bldg., Upper Darby, Pa., archt.

▲ **Lukens Steel Co.**, Coatesville, Pa. Separate Contracts $1,000,000. 1 story, steel, masonry 11,000 sq. ft. steel plate testing LABORATORY, COATESVILLE, PA. G. S. Spackman, c/o owner, engr.

LeBaron Realty Co., Concordville, Pa. Separate Contracts. $650,000. RESIDENTIAL DEVELOPMENT, 26 units, Baltimore Ave. and Chenee Rd., CONCORDVILLE, PA.

▲ **Joseph Barnes & Son**, Warrington, Pa. Separate Contracts. $1,300,000. RESIDENTIAL DEVELOPMENT, 71 units, DOYLESTOWN, PA.

Frank Ray, Langhorne, Pa. CA $400,000. INDUSTRIAL PARK, 6 one story 55,000 sq. ft. masonry bldgs., EDDINGTON, PA. Richard W. Fechtenberg, Eddington, Pa. Harold M. Neal, RD, Bristol, Pa., engr.

▲ **Crefeld Constr. Corp.**, Pioneer Rd., Lansdale, Pa. Separate Contracts. $2,000,000. RESIDENTIAL DEVELOPMENT, 200 units, Lansdale Area, LANSDALE, PA.

Wynnewood Constr. Corp., B. L. Statzell, Haverford, Pa. Separate Contracts. $650,000. RESIDENTIAL DEVELOPMENT, 43 units, General Warren Village, MALVERN, PA.

▲ **Carcaise Constr. Co.**, 481 Virginia Ave., Rochester, Pa. LB $1,418,198. general constr. SECONDARY SCHOOL for Shenango Area Joint School District, NEW CASTLE, PA. Pub. School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Feb. 26.

Cedarbrook Corp., 1454 Greenwood St., Phila., Pa. Separate Contracts. $400,000. RESIDENTIAL DEVELOPMENT, Cresmont Gardens, PHILA, PA.

▲ **Irwin & Leighton**, 1505 Race St., Phila., Pa. CA $1,357,000. BACHELOR OFFICERS' QUARTERS and MESS HALL, NBy 8864, PHILA, PA. Dpt. Navy, Phila. Naval Base, Phila., Pa. Awarded Mar. 11. CD 1/22, under LB.

▲ **Gelsman Bros.**, 8120 Heacock Lane, Wyncote, Pa. Separate Contracts. $1,430,000. RESIDENTIAL DEVELOPMENT, 130 units, Byberry Section, PHILA, PA.

▲ **Pontz Kopeland**, Post Office Bldg., Flourtown, Pa. CA $1,000,000. eight 2 story, part bsmnt., 130,000 sq. ft. MFG. WAREHOUSE BLDGS., Second St. and Hunting Park Ave., PHILA., PA. Rising Sun Industrial Park, c/o contractor. Warren Beltz, Huntingdon Valley, Pa., archt.

Robert E. Lamb & Son, 3429 W. Indiana Ave., Phila., Pa. CA $400,000. 2 38,600 sq. ft. brick, steel MANUFACTURING BLDGS., OFFICE, PHILA., PA. Yarnall-Waring Co., 102 Mermaid Lane, Phila., Pa.

▲ **Mount Lebanon Builders, Inc.**, 470 Washington Rd., Pittsburgh, Pa. LB $1,320,282. 1 and 2 story, brick, block L-shaped SHOPPING CENTER, Rte. 30, North Versailles, PITTSBURGH, PA. Great Valley Mart, Inc., Oliver Bldg., Pittsburgh, Pa. Bids Feb. 23. CD 2/14, under Pa., McKeesport.

Miller & Padavani, Grandview Ave., Langhorn, Pa. Separate Contracts. $491,000. RESIDENTIAL DEVELOPMENT, 23 units, Hulmeville Rd., TREVOSE, PA.

▲ **Jos. F. Hughes & Co.**, 5 E. Franklin St., Baltimore 2, Md. CA $1,055,261. 1 and 2 story, brick, concrete, steel block Frankford Elementary SCHOOL, BALTI-

(Continued on page 96)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England | **Middle West**
Middle Atlantic | **West of Mississippi**
South | **Far West**

PROPOSED WORK

Water Supply | **Public Buildings**
Sewers, Waste Disposal | **Mass Housing**
Bridges | **Commercial Buildings**
Streets & Roads | **Industrial Buildings**
Earthwork, Waterways | **Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

Big job, this all-concrete, 4-tier Ann Arbor, Michigan, parking structure. Size is 233' x 165'; capacity, 479 cars.

REX RAILPORTER

"Best way to do this big 4-story job...and save most"

—says busy contractor

This is Railporter. Capacity is 1400 lb., 14.6 cu. ft. Non-powered trailer unit doubles capacity.

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- Top pour was 160 yards in 6 hours
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WASHINGTON, D. C.: TOWER BLDG.
IN CANADA: 700 BAY ST., TORONTO
2002 ST. CATHERINE ST. WEST, MONTREAL

(Continued from page 94)

MORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. CD 3/7, under LB.

Joseph Nebel, 3408 Wisconsin Ave. N.W., Wash., D.C. CA $531,010 (6 bidders) National HEADQUARTERS, 20 and E Sts. N.W., WASH, D.C. Associated General Contractors of America, Munsey Bldg., Wash., D.C. Bids Mar. 6. CD 2/27.

James H. Wood, 15 E. North St., Dover, Del. CA $624,000. ELEMENTARY and HIGH SCHOOL addn., LEWES, DEL. Lewes Special School Dist., Lewes, Del. Bids Feb. 27. CD 3/15.

Silverbrook Development, Inc., Hugh F. Gallagher, Jr., Box 64, Newark, Del. Separate Contracts. $400,000. 20-unit RESIDENTIAL DEVELOPMENT, Oaklands, NEWARK, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Jacksonville**—HEADQUARTERS—BA On Or About 4/24—U. S. Eng., P.O. Box 4970, Zone 1, Group Headquarters Building (FY-57) Imerson Airport, Serial No. ENG-01-123-57-40.

BUILDINGS—BA

La., Shreveport—SCHOOL—BA 4/3—Caddo Parish School Bd., elementary school in Holly Heights subdivision on McDaniel Dr. across from municipal airport. $456,000. CD 9/14/51.

HEAVY CONSTRUCTION—LB & CA

† **Louis Briggs Constr. Co.**, 4425 Pio Nono Ave., Macon, Ga., LB $924,449, two barracks and mess hall addn., U. S. Naval Air Station, Glynco, NBy 4950, Spec. 4950/56. BRUNSWICK, GA. Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, S. C. Bids Mar. 14. CD 2/14.

† **U. S. Eng.**, foot of Prytania St., New Orleans, La. rejected bids Jan. 22, channel excav. and control weir, Ascension and Livingston Parishes, Inv. 57-175, LOUISIANA. LB $647,895. Will re-advertise. CD 2/4, under LB.

▲ **John A. Petty**, Rte. 3, Longview, Tex. LB $904,471. Proj. 1, addns., alterations to sewage collection sys. and water distr. sys., WINNFIELD, LA. Mayor and Bd., Winnfield, La. Bids Mar. 7. CD 2/13;
Pittsburgh-Des Moines Steel Co., Praetorian Bldg., Dallas, Tex. LB $184,260. Proj. 2, elevated water tank (Winnfield, La.);
Wilks, Dake & Steed, Box 573, Tyler, Tex. LB $455,450. Proj. 4, sewage treatment plant (Winnfield, La.).

Metropolitan Sewer Dist., 412 W. Market St., Louisville, Ky. rejected bids Jan. 8, Contr. 2268, Ohio River Interceptor Sewer, Sect. B, 4,500 ft. 8 in. sewer, LOUISVILLE, KY. LB $773,815. Will re-advertise. CD 1/11.

BUILDINGS—LB & CA

▲ **John Heslep**, South Carolina Natl. Bank Bldg., Columbia, S. C., LB $1,149,700. men's DORMITORY, COLUMBIA, S. C. University of South Carolina, Columbia, S. C. Bids Mar. 5. CD 3/6.

Fiske-Carter Constr. Co., Box 1251, Spartanburg, S. C., CA $596,459. DORMITORY, SPARTANBURG, S. C. Wofford College, Spartanburg, S. C. Bids Jan. 29. CD 6/1.

▲ **Daniel Constr. Co.**, Box 2286, Greenville, S. C., LB $3,895,000. TRANSFORMER MFG. PLANT, ATHENS, GA. Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh, Pa. Bids Mar. 11. CD 3/5.

▲ **Barge-Thompson Co.**, 36 Ellis Ave. N.E., Atlanta, Ga., CA $1,127,300, 3 story addn. to Central OFFICE BLDG., MOBILE, ALA. Southern Bell Tel. & Tel. Co., 202 Government St., Mobile, Ala. Warren, Knight & Davis, Protective Life Bldg., Birmingham, Ala., archts. Awarded Mar. 12.

▲ **Whittenberg Constr. Co.**, 2214 S. Floyd St., Louisville, Ky., LB $2,268,000 (6 bidders) Stage No. 2, 4 story, rein.-con., brick, T-shaped General HOSPITAL ADDN'S., LOUISVILLE, KY. City General Hospital, 323 E. Chestnut St., Louisville, Ky. Bids Mar. 11. CD 2/8.

† **Sullivan & Cozzart, Inc.**, P.O. Box 953, Louisville, Ky. CA $627,000. Naval and Marine TRAINING CENTER, incl. rifle range, garage, maintenance bldg., warehouse, magazines, admin. and classroom bldg., NOy 91447, LOUISVILLE, KY. Bureau Yards & Docks, Fifth Naval Dist., Norfolk, Va. Bids Feb. 19, awarded Mar. 11. CD 2/26.

MIDDLE WEST

BUILDINGS—BA

▲ **Wis., Appleton**—SCHOOL—BA 4/23—Bd. Educ., Appleton, 1 and 2 story James Madison Junior High School. $1,400,750. Plans deposit $50. R. N. LeVee & Assoc., 1000 W. College Ave., archts. CD 12/13.

HEAVY CONSTRUCTION—LB & CA

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison,
Wis.—F. C. Raemisch & Son, Wanakee, Wis., CA $282,340. Contracts 2 and 1, grading, ballast, base, structures 4.615 mi. S. T. Hy. 60, Proj. T 067-1 (3) and T 067-1 (3), Washington Co.;
Wis.—Hoffman Constr. Co., Black River Falls, Wis., CA $332,382, Contract 1, grading, ballast and structures 10.103 mi. U. S. Hy. 1, Proj. F-019-1 (38), Trempeleau Co.;
Wis.—Philip C. Kaiser Constr. Co. Inc., Portage, Wis., CA $224,585, Contract 1, grading, ballast, structures 4.783 mi. S. S. Hy. 02, Proj. T 046 (3), Taylor Co.;
Wis.—Kramp Constr. Co., 2775 S. 27 St., Milwaukee, Wis., CA $1,183,564, Contract 1, c. conc. 6.75 mi. S.T. Hys. "U" and "BB", Proj. S 0344 (5) and S-0351 (7), Milwaukee Co.;
Wis.—B. R. Amon & Sons, Elkhorn, Wis., CA $113,407, Contract 1, base, single aggreg. bit. surf. 4.453 mi. C. T. Hy. "B", Proj. S 0456 (2), Rock Co.;
Wis.—Badger Bituminous, Inc., Barneveld, Wis., CA $189,645, Contract 1, b. conc. 14.9 mi. U. S. Hy. 18, Proj. T 01701 (12) and T 017-1 (13) Grant and Iowa Counties. CD 2/25.;
Wis.—James Cape & Sons, 701 Water St., Racine, Wis., CA $710,579, Contract 1, c. conc. and weighing station 4.893 mi. U. S. Hys. 18 and 15, Proj. F 017-2 (44), Dane Co. Grand total $3,036,802. Bids Mar. 12. CD 2/27.

WISCONSIN—State Hy. Comn., State Office Bldg., Madison,
The Druml Co., 1788 N Water St., Milwaukee, Wis., CA $510,473. Contract 1, grading, base b. con. 0.244 mi. East-West Expressway (N. 35 St. Grade Separation) City of Milwaukee, Proj. IN 102-2 (4). CA $277,674. Contract 1, structures, retaining walls, approaches 0.205 mi. East-West Expressway (N. 25 St. Bridge) Road, Proj. IN 102-2 (5), Milwaukee Co. Bids Mar. 12.

MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
Raff & Dexter, 210 W. Greenlawn Ave., Lansing, Mich. CA $737,507, est. $800,000. rein.-con. bridge on M-46 over Saginaw River, F 81 of 73-7-7 C2-U (F 206 7), Saginaw Co. CD 2/28, under LB.

MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
L. W. Lamb Co., Holland, Mich. CA $677,171, est. $830,000. rein.-con., steel bridge, retaining wall, track work, relocation Plaster Creek, Grand Rapids Expressway, BU K2 of 41-25-6 C2-UO (U 140 12), (41131), Kent Co. CD 3/13, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
Mich.—Sargent Constr. Co., 2840 Bay Rd., Saginaw, Mich. CA $1,326,272. light, power and signal facilities. c. conc. 0.352 mi. BUI 82111 C5-UO (SP-82-127); (UI 07-1-2), Wayne Co.;
Mich.—S. J. Groves & Sons, P.O. Box 8, Ann Arbor, Mich. CA $2,319,152, est. $2,470,000. dual 24 ft. c. conc. 9.594 mi. relocation US-16, I 70063 C1-Rn (SP 70-65), etc., Ottawa Co. CD 2/28, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
Mich.—Loselle Constr. Co., 1555 Goddard St., Wyandotte, Mich. CA $1,902,378, est. $2,070,000. dual 24 ft. c. conc. base course, 4 bridges 2.374 mi. US-23, BI 25032 C1-RO (I 07-2 18), Genesee Co.;
Mich.—Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich. CA $1,586,134, est. $1,830,000. 22 ft. c. conc. in grade separations 7.718 mi. BI 82022 C3-UN (SP 82-96), Wayne Co. CD 2/13 and 2/27.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,
Sargent Constr. Co., 2840 Bay Rd., Saginaw, Mich. CA $2,237,097, est. $2,340,000. dual 22 ft. c. conc. 8.917 mi. US-127 and 5.468 mi. 21 ft. prime and double seal west Service Rd., M 33031 C1-RN, M 33031 C2-UN Ingham and Jackson Counties.
Mich.—Rieth-Riley Constr. Co., 837 Emmett St., Battle Creek, Mich. CA $859,599, est. $970,000. single and double 22 ft. c. conc. 5.462 mi. US-131, M 39011 C3-RN (SP 39-1), M 39011 C4-RN (SP 39-1), etc., Kalamazoo and St. Joseph Counties. CD 3/13, under LB.

BUILDINGS—LB & CA

R. P. Carbone Constr. Co., 1504 Scovil Ave., Cleveland 15, O., LB $587,752 (4 bidders) general contract HIGH SCHOOL, BROOKLYN, O. Bd. Educ., 9700 Biddulph Ave., Cleveland 9, O. Bids Mar 14. CD 2/14.

▲ **Frank Messer & Sons, Inc.**, 4612 Paddock St., Cincinnati, O., LB $1,132,710 (3 bidders) TEACHERS COLLEGE, BOTANY, ZOOLOGY and PHYSICS BLDG., CINCINNATI, O. University of Cincinnati, Burnet Woods Park, Cincinnati, O. Bids Mar. 7. CD 2/18.

▲ **Weinstein Constr. Co., Inc.**, 573 E. Talmadge St., Akron, O., LB $3,677,000 (9 bidders) WAREHOUSE, SOLON, O. Kroger Co., 35 E. 7 St., Cincinnati, O. Bids Mar. 5. CD 1/29.

▲ **Crane Constr. Co.**, 201 E. Walton St., Chicago, Ill., CA $2,400,000. 28 story, brick APARTMENT, 13 E. Burton St., CHICAGO, ILL. Margaret E. Code, 10 S. LaSalle St., Chicago, Ill. Philip Maher, 157 E. Erie St., Chicago, Ill., archt.

Erik A. Borg Co., 6649 Ridge Ave., Chicago 26, Ill., CA Est. $550,000. 1 story, 54,000 sq. ft. WAREHOUSE, GENOA, ILL. Leich Electric Co., 427 W. Randolph St., Chicago, Ill. Bids Feb. 14. CD 2/11.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲† **N. M., Los Alamos**—SIGMA—BA 4/22—Atomic Energy Comn., Los Alamos, 165,000 sq. ft. Sigma Bldg., Atomic Energy Comn. $3,000,000-$3,500,000. Extended date. CD 2/4.

▲ **Tex., Jacksonville**—SCHOOL—BA 4/25—Jacksonville Independent School Dist., Jacksonville, Senior High School $1,000,000. Caudill, Rowlett & Scott & Assocs., 425 S. Main St., Bryan, Tex., engrs. CD 3/28/56.

HEAVY CONSTRUCTION—BA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Mo.—**Massman Constr. Co.**, 608 Midland Bldg., Kansas City, Mo. CA **$1,081,776**. main piers of Missouri River Bridge, Boone and Cooper Counties;

Mo.—**St. Louis Co. Bridge Co.**, 7929 Alabama Ave., St. Louis, Mo. CA **$308,577**. two 62 ft., one 76 ft. continuous I beam spans Sta. 732 plus 95, City of St. Louis; CA **$360,013**. one 55 ft., one 93 ft., one 35 ft., plate girder spans Sta. 702 plus 92, city of St. Louis; CA **$317,732**. one 91 ft., plate girder spans Sta. 720 plus 43, St. Louis City; CA **$78,604**. wall at Sta. 0 plus 75 Ramp 1, 347 ft. cantilever, city of St. Louis. Grand total $2,146,702. Bids Mar. 1, awarded Mar. 14. CD 3/11, under LB.

MISSOURI—State Hy. Dpt., Jefferson City, **St. Louis County Bridge & Grade Co.**, 7929 Alabama Ave., St. Louis, Mo. CA **$976,414**. graded earth, 76 ft. c. conc. 0.856 mi., city of St. Louis. Bids Mar. 1, awarded Mar. 14. CD 3/11, under LB.

▲† **Southwest Welding & Mfg. Co.**, 3201 W. Mission Rd., Alhambra, Calif. LB **$7,555,445**. penstocks and surge tanks, Garrison Dam and Reservoir Proj., near Riverdale, NORTH DAKOTA. U. S. Eng., Riverdale, N. D. Bids Mar. 5. CD 2/27.

▲† **Fred R. Combs Co.**, 2901 Aldrich Ave. S., Minneapolis, Minn., CA **$1,338,033**. P.O.L. facilities, Grand Forks Air Force Base, Inv. 25-066-57-5, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Dec. 13. CD 12/18, under LB.

▲† **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Iowa. LB **$11,697,161**. Schedule 1, **$10,518,535**. Schedule 2, **$11,333,767**. Schedule 3, **$10,144,630**. Schedule 4. (6 bidders) airfield paving, Grand Forks Air Force Base, ENG-25-066-57-49, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 13. CD 2/11.

▲† **U. S. Eng.**, 1709 Jackson St., Omaha, Neb., rejected bids Feb. 21, airfield paving and hydrant fueling, Minot Air Force Base, ENG-25-066-57-45, MINOT, N. D. LB **$13,073,582**. CD 2/28, under LB.

▲† **Misco-West Coast Co.**, 1121 W. Hanford St., Seattle 4, Wash., CA **$1,056,383**. pumping plant for Helena Valley irrigation proj. at Canyon Ferry Dam, Spec. DC 4783, MONTANA. Bureau Reclamation, Dpt. Interior, Gold Block Bldg., Helena, Mont. Bids Feb. 26, awarded Mar. 8. CD 3/5, under LB.

▲ **NEW MEXICO**—State Hy. Dpt., State Hy. Bldg., Cerrillos Rd., Santa Fe,

N. M.—**Armstrong & Armstrong**, 132 W. Walnut St., Roswell, N. M. CA **$1,811,362**, est. $2,522,655. Socorro-north, Proj. I 091-3 (4), Socorro Co.;

N. M.—**Metropolitan Paving Co.**, 300 S. Indiana St., Oklahoma City, Okla. CA **$1,866,829**, est. $2,356,655. Canoncito-east, Proj. I 091-5 (9), Santa Fe Co. CD 1/29, under LB.

▲† **H. B. Zachry Co., Constr. Div.**, Box 10188, San Antonio, Tex. CA **$1,718,124**. taxiways and aprons Holloman Air Force Base, ENG-29-005-57-51, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. CD 3/11, under LB.

BUILDINGS—LB & CA

▲ **Watson Constr. Co.**, Baker Bldg., Minneapolis, Minn. CA **$2,049,000** (9 bidders) general constr. 5 story, bsmnt. HOSPITAL, Chicago Ave. between Seventh and Eighth Sts., MINNEAPOLIS, MINN. St. Barnabas Hospital, 920 S. Seventh St., Minneapolis, Minn. Grand total $3,548,986. Bids Feb. 21. CD 1/30.
R. L. Anderson-Cherne, Inc., 5060 Excelsior Blvd., Minneapolis, Minn. CA **$1,155,780** (3 bidders) mechanical work (Minneapolis, Minn.).
Batzli Electric Co., 1807 S. First St., Minneapolis, Minn. CA **$344,206** (9 bidders) electrical work (Minneapolis, Minn.).

▲† **General Installation Co.**, 950 Kingsland Ave., St. Louis 14, Mo. LB **$1,485,000**. air-conditioning at U. S. POST OFFICE, Market St. between 17 and 18 Sts., ST. LOUIS, MO. General Services Admin., Pub. Bldgs. Service, 2306 E. Bannister Rd., Kansas City 14, Mo. Bids Mar. 6. CD 10/1.

▲ **The Austin Co.**, 510 N. Dearborn St., Chicago 10, Ill. CA Est. **$2,000,000**. design and construct, 98,500 sq. ft. FACTORY, 38-acre site south of FAYETTEVILLE, ARK. Standard Register Co., 626 Albany St., Dayton, O. CD 10/17.

Davies Constr. Co., 1181½ E. St. Andrew St., Rapids City, S. D., LB **$437,400** general contract Baken Park SHOPPING CENTER, RAPID CITY, S. D. Owner, c/o Bob Ballmes, superv. engr., 56 St. Andrews St., Rapid City, S. D. CD 2/11, under Public Buildings.

▲ **Parsons Constr. Co.**, 2512 Deer Park Blvd., Omaha, Neb. CA **$2,186,813**. Constr. No. 243 POWER HOUSE, SCREEN HOUSE, circulation water tunnels and structures for outdoor electrical installations, OMAHA, NEB. Omaha Public Power Dist., 17 and Harney Sts., Omaha, Neb. CD 3/12, under LB.

▲ **Skelly Oil Co.**, Skelly Bldg., Tulsa, Okla. Own Forces **$3,000,000**. 3 to 4,000 bbl. air-cooled HF ALKYLATION UNIT, EL DORADO, KAN. CD 2/18/54.

▲† **Ebel Constr. Co.**, 2 W. 9 St., Kansas City, Mo. CA **$1,590,000**. construct and finance 100 HOUSING UNITS (Capehart), FORT LEAVENWORTH, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo. CD 2/19, under LB.

Thos. S. Byrne, Inc., c/o Fort Worth National Bank Bldg., Fort Worth, CA **$850,000**, 1 story, masonry, concrete ENGINEERING BLDG. 100,000 sq. ft. parking area on roof, FORT WORTH, TEX. Convair Aircraft Co., 2500 Montgomery, Fort Worth, Tex. CD 8/27/52.

▲ **Brown & Root, Inc.**, Box 3, Houston, Tex., CA, vinyl chloride Monomer PLANT, 50,000,000 lbs. annually capacity, in Deer Park, HOUSTON, TEX.

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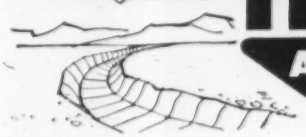

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Diamond Alkali Co., Deer Park, Tex., and 300 Union Commerce Bldg., Cleveland, O. CD 4/20/48.

Rich Field Corp., c/o Phil Rich, c/o 2900 Caroline St., Houston, Tex. Owner Builds, $500,000. APARTMENTS, HOUSTON, TEX. CD 3/11.

Timmons Constr. Co., Box 3128, Amarillo, Tex., CA $441,500. CHURCH, PLAINVIEW, TEX. First Baptist Church, Plainview, Tex. Kerr & Kerr, 512½ Broadway, Plainview, archts. CD 4/8/55.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., Los Angeles—BA 4/5—Los Angeles, Flood Control Dist., 2250 Alcazar St., constr. Hollydale B Storm Drain, Bond Issue Proj. 20, Downey, $708,900. CD 11/7/52.

▲† **Arizona-Nevada**—BA 4/11—Bureau Reclamation, Dpt. Interior, Kanah, Utah, Glen Canyon Dam and power plant, Colorado River Storage Proj., Spec. DC 4825. Extended date. L. N. McClellan, Bldg. 1 A, Denver Federal Center, Denver, Colo., ch. engr. CD 1/16.

▲† **California**—BA 4/11—U. S. Eng., 751 S. Figueroa St., Los Angeles, imprv. Walnut Creek inlet channel Big Dalton Wash to San Gabriel River, ENG-04-353-57-36, $3,500,000. CD 4/21/44.

▲† **California**—BA 4/16—U. S. Eng., 751 S. Figueroa St., Los Angeles, imprv. Eaton Wash Channel Eaton Dam to Huntington Drive, ENG-04-353-57-29, $1,-500,000. CD 4/21/44.

▲† **Calif., Castle Air Force Base**—DORMITORIES, etc.—BA 4/18—U. S. Eng., 180 New Montgomery St., San Francisco, two 3 story, 16,000 sq. ft. rein.-con. dormitories, and dining hall, ENG-57-130. $1,000,-000. CD 8/23.

▲ **Calif., Walnut Creek**—BA 4/18—Central Contra Costa Sanitary Dist., 1250 Spring Brook Rd., sewage treatment plant enlargement, $1,076,000. Plans deposit, full size $50, half size $30. Brown & Caldwell, 66 Mint St., San Francisco, engrs. CD 8/13.

† **Nev., Indian Springs**—HOUSING—BA 4/23—U. S. Eng., 180 New Montgomery St., San Francisco, Calif., 23 duplex family housing units, utilities, roads, sidewalks, ENG-57-136. $650,000. CD 8/23.

▲ **Calif., Los Angeles**—BA 5/1—City Council, City Hall, constr. ocean outfall for effluent disposal at Hyperion Treatment Plant, $15,000,000. CD 5/21/55.

BUILDINGS—BA

▲ **Wash., Vancouver**—JUNIOR COLLEGE—BA 4/11—School Dist. 37, 2223 Kauffman St., 6 rein.-con., frame Junior College Bldgs. with heat to be supplied by enlarged existing plant. $1,366,700. Plans deposit $25. McCoy & Bradbury, 7007 Highway 99N, archts. CD 5/16.

▲ **Ore., Portland**—CLUB WING—BA 4/16—Multnomah Athletic Club, 1849 S.W. Salmon St., three-level club wing addn. $1,000,000. Church, Newberry & Roehr, Builder Exchange Bldg., archts. CD 9/20.

HEAVY CONSTRUCTION—LB & CA

Radco Constr. Co., 2404 W. 7th St., Los Angeles, Calif. LB $471,442, est. $513,600. Storm Drain Bond Issue Proj. 191, Pasadena, LOS ANGELES, CALIF. County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. CD 2/19.

† **U. S. Eng.**, 751 S. Figueroa St., Los Angeles, cancelled bids to have been opened Feb. 20, security fence and utilities, Edwards Air Force Base, Serial No. ENG-04-353-57-67, MUROC, CALIF. $500,000. CD 2/8.

▲ **W. & S. Constr.**, 2509 West Rosecrans St., Compton, Calif. LB $1,010,000. (14 bidders) constr. WW system, NORCO, CALIF. Norco Community Services Dist., 1731 Park Ave., Norco, Calif. Bids Mar. 13. CD 2/20.

BUILDINGS—LB & CA

▲ **Matelich Corp.**, Box 356, Kalispell, Mont. LB $1,099,350. (6 bidders) 1 story, part bsmnt. 43,200 sq. ft., rein.con. HOSPITAL, KELLOGG, IDAHO. West Shoshone Hospital Dist. No. 1 Kellogg Idaho. Bids Mar. 14. CD 2/14.

▲ **Olson Constr. Co.**, 1549 S. 2 St. W., Salt Lake City, Utah. CA $1,000,000. 8 addnl. Chemical PLANT buildings, near BRIGHAM CITY, UTAH. Thiokol Chemical Corp., 778 N. Clinton Ave., Trenton, N. J. CD 4/24.

▲ **Christiansen**, 209 W. 13 St. S., Salt Lake City, Utah. LB $3,880,000. MENS RESIDENCE HALL Brigham Young University, PROVO, UTAH. Latter Day Saints Church, 47 E.S. Temple St., Salt Lake City, Utah. Bids Feb. 28. CD 2/5.

▲ **Sound Constr. & Eng.**, 1300 Aloha St., Seattle, Wash. CA $2,355,346. SPAR MILL FACILITY, SEATTLE, WASH. Boeing Airplane Co., 7755 E. Marginal Way, Seattle 4, Wash. Bids Jan. 10. CD 12/21.

▲ **Ford J. Twaits Co.**, 507 Bixel St., Los Angeles, Calif. CA $1,350,000. 2 story OFFICE BLDG., 5500 El Segundo Blvd., EL SEGUNDO, CALIF. Ramo Woodridge Corp., 5730 Arbor Vitae, Los Angeles, Calif. Albert C. Martin, 3333 Beaudry St., Los Angeles, Calif., archt.

Causey & Causey, 808 N. Brand Blvd., Glendale, Calif. CA $500,000. 2 story, 37 family, 3 APARTMENT BLDGS., 1303-15 N. Central, GLENDALE, CALIF. Glendale Garden Homes, 808 N. Brand St., Glendale, Calif.

▲ **Morley Bldg. Co.**, 7700 Sunset Blvd., Los Angeles, Calif. CA $1,370,000. Hawthorne HIGH SCHOOL addn., HAWTHORNE, CALIF. Centinele Valley Union High School Dist., 365 Hawthorne Way, Hawthorn, Calif. Bids Jan. 3. CD 1/7, under LB.

Flowers & Shirley, P.O. Box 428, Lawndale, Calif. CA $716,000. LEUZIUGER HIGH SCHOOL addns., 2nd increment, Units A, J-1, G, P, P-1, K, Lawndale, HAWTHORNE, CALIF. Centinella Valley Union High School Dist., 365 Hawthorne St., Hawthorne, Calif. Bids Jan. 4. CD 1/11, under LB.

▲ **Morley Bldg. Co.**, 7700 Sunset Blvd., Los Angeles, Calif. CA $2,083,900. 4 story, penthouse LIBRARY BLDG., 2 story, bsmnt. MUSIC BLDG. and site development, total floor area 218,000 sq. ft. at Los Angeles State College of Applied Arts & Sciences, San Bernardino Freeway Campus, LOS ANGELES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Mar. 6, awarded Mar. 12. CD 3/12, under LB.

West Coast Plumbing & Heating, 5715 West Adams, Los Angeles, Calif. CA $517,778. mechanical work, (Los Angeles, Calif.).

▲ **B. L. Metcalf Co.**, 1460 N. Glassell St., Orange, Calif. CA $1,779,000. 4-frame, stucco CLASSROOM BLDG. No 2, 15711 S. Pioneer Blvd., NORWALK, CALIF. Excelsior Union High School Dist., 17923 S. Pioneer Blvd., Norwalk, Calif. Bids Feb. 6, awarded Mar. 7. CD 2/8.

Jack H. MacDonald Co., 321 S. San Vicente Blvd., Los Angeles, Calif. CA $700,000. 152x245 ft., BUILDING to house computer, 2502 Colorado Ave., SANTA MONICA, CALIF. John M. Stahl, 321 S. San Vicente Blvd., Los Angeles, Calif.

▲ **D & E Corp.**, 8906 W. Olympic Blvd., Beverly Hills, Calif. CA $1,168,500. 1,125 sq. ft., 177 DWELLINGS, Sandoval Ave., Bradgate Dr., Agar Place, Colfair St., Chapelle Ave., WHITTIER, CALIF. Pigeon Bldg. Co., 8906 W. Olympic Blvd., Beverly Hills, Calif.

CANADA

HEAVY CONSTRUCTION—BA

▲† **Newfoundland, Stephenville**—HOUSING—BA 4/15—U. S. Eng., Eastern Ocean Dist., Harmon Air Force Base, Stephenville, housing at air force base in three sections as (1) about 200 family units (2) about 200 family units (3) all outside utilities and site work incl. water sys., sanitary and storm sewerage sys., electrical paved roads, parking areas, etc. $3,000,000. Plans deposit $30. CD 2/21.

BUILDINGS—BA

▲ **B. C., Vancouver**—HOTEL—BA 4/2—Hotel Georgia, Howe and Georgia Sts., 12 story, steel, concrete hotel addn. $2,000,000. Thompson, Berwick, Pratt, 1553 Robson St., archts. CD 12/8/53.

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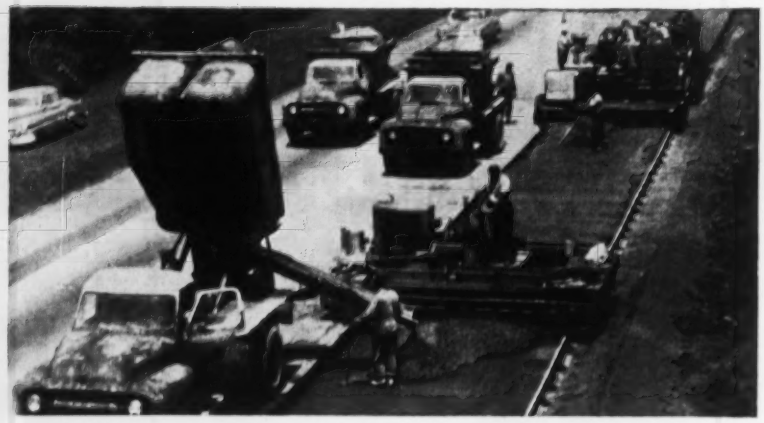

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Ont., **Port Credit**—SCHOOL—BA 4/2—South Peel Bd. Educ., Port Credit High School, 2 story, reinf.-con. frame secondary school, Lorne Park Rd. $750,000. Plans deposit $25. Hanke, Irwin & Pearson, 2848 Bloor St. W., Toronto, archts. CD 10/3.

▲ **Que., Montreal**—WEST OFFICE WING—BA 4/3—Dorchester Towers Corp., 1390 Sherbrooke St. W., (7 invited bidders) 16 floors, 67x193 ft. structural steel, reinf.-con., west wing of office bldg. Over $2,000,000. Reuben Fisher, 3177 St. Sulpice Rd., archt. Howard T. Fisher & Assocs., 230 Park Ave., New York, N. Y., assoc archts. Irving S. Backler, 5253 Decarie Blvd., engr. CD 5/31.

▲ **N. B., Fredericton**—HOUSING UNITS—BA 4/4—C. F. Emms, Central Mortgage & Housing Corp., 1032 Gottin St., Halifax, N. S., 341 Class I row housing units with related services at Army Camp, for Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Over $1,500,000. Extended date. Wiggs, Lawton & Walker, 4350 Sherbrooke St. W., Montreal, Que., archts. Wiggs, Walford, Frost & Lindsay, 4350 Sherbrooke St. W., Montreal, Que., engrs. CD 1/2.

▲ **Ont., London**—BIOLOGY, etc.—BA 4/10—University of Western Ontario, Thames Hall, London, 3 story, bsmt. L-shaped, steel, biology and geology bldg. $1,500,000. O. Roy & Moore & Co., 260 Dundas St., archts. Wallace, Carruthers & Assoc. Ltd., 92 Yorkville Ave., Toronto, consult. engrs. CD 7/25.

▲ **Sask., North Battleford**—POST OFFICE—BA 4/17—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., post office. $1,000,000. E. A. Gardner, c/o owner, ch. archt. CD 11/23/55.

▲ **N. B., St. Johns**—HOSPITAL WING—BA 4/23—St. Johns General Hospital, St. John, 8 story, 53x176 ft., structural steel frame, brick, hospital wing, concrete fdn. $4,000,000. Plans deposit $100. Allward & Gillies, 1 Market St. and Mott & Myles, 13 Germain St., assoc. archts. CD 12/12/52.

▲ **Ont., Toronto**—FEDERAL OFFICE—BA 5/1—Dpt. P. Wks., Hunter Bldg., Ottawa, 16 story, 300 ft. frontage federal office bldg., Adelaide St. E. and Victoria St. $14,000,000. Plans deposit $500. Shore & Moffat, 51 Wellington St. W., archts. CD 12/13.

BUILDINGS—SLC

▲ **Que., Valleyfield** — PLANT — Montreal Cottons Ltd., Valleyfield, soon lets contract superstructure for 1 story, 264x1,200 ft. rein.-con., structural steel, brick, bloc textile plant. $2,000,000. E. B. Jubien, ch. engr., Engineering Staff of Dominion Textiles, 1950 Sherbrooke St. W., Montreal, Que., prepared plans.

HEAVY CONSTRUCTION—LB & CA

▲† **J. A. Jones Constr. Co. Ltd.**, P.O. Box 966, Charlotte N. C., U.S.A., CA **$7,233,505**. addnl. buildings and runway extens. at Harmon Air Force Base, STEPHENVILLE, NEWFOUNDLAND. U. S. Eng., Harmon Air Base, Stephenville, Newfoundland. Bids Jan. 16, awarded Mar. 7. CD 1/7.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Toronto, **Pigott Constr. Co. Ltd.**, 36 James St. W., Hamilton, Ont., CA **$1,340,500** Cont. 56-219, high level bridge, concrete deck, electrical and stone work, Burlington Beach. CD 3/13, under LB.

▲ **Hydro-Electric Power Commission of Ontario**, 620 University Ave., Toronto, Ont. Owner Builds. **$14,000,000.** generating station at Silver Falls, 25 N.W. of Port Arthur, single unit, remote controlled 43,500 k.w. station, involving 9,000 ft. tunnel 14 ft. diam. from intake at Dog Lake to powerhouse, ONTARIO.

▲ **Somerville Constr. Co.**, 4854A Yonge St., Toronto, Ont., CA first 90 mi. oil pipe line east of Sarnia running from Sarnia to Port Credit, to serve British American Oil Co. refinery at Clarkson and Regent Refining plant at Port Credit, ONTARIO. Interprovincial Pipe Line Co., 25 Adelaide St. W., Toronto, Ont. Awarded Mar. 4. CD 4/16/53, under Saskatchewan and Manitoba; **Majestic Contractors Ltd.**, 408 Royal Trust Bldg., Edmonton, Alta., CA 66 mil. oil pipe line (Ontario).

▲† **Perini Ltd.**, 248 Albert St., Ottawa, Ont., LB **$3,732,000** (10 bidders) air terminal bldg., Ottawa Airport Uplands, OTTAWA, ONT. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Mar. 12. CD 1/30.

BUILDINGS—LB & CA

▲ **Commonwealth Constr. Co. Ltd.**, 700 Taylor St., Vancouver, B. C., LB **$4,084,876**, steel, concrete CIVIC AUDITORIUM, Dunsmuir and Hamilton Sts., VANCOUVER, B. C. City, City Hall, Vancouver, B. C. Bids Mar. 5. CD 2/8.

▲ **Malcom Constr. Co. Ltd.**, 554 Pembina Hy., Winnipeg, Man., LB **$1,119,909** (10 bidders) OPERATING BLDG. Notre Dame and Weston Sts. to house various departments, WINNIPEG, MAN. City Hydro-Electric System, 55 Princess St., Winnipeg, Man. CD 8/29.

W. **H. Cooper Constr. Co. Ltd.**, 21 Hunter St. E., Hamilton, Ont., CA **$600,000** (6 bidders) NEWSPAPER PLANT addn., alterations, HAMILTON, ONT. Hamilton Spectator Ltd., 115 King St. E., Hamilton, Ont. Wm. R. Souter & Assoc., 36 James St. S., Hamilton, Ont., archts. Awarded Mar. 6.

▲ **S. & H. Enterprises Ltd.**, 333 Craig St. E., Montreal, Que., Owner Builds, **$3,000,000.** 200 HOUSES in housing proj., Chemin de la Petite Cote, LAVAL WEST, QUE.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **Baker & Ford**, 911 17 St., Bellingham, Wash., CA **$4,643,647**, Sch. F-2, DEW line station, Inv. 576-60, Nikolski, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Mar. 8. CD 3/15, under LB;

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S. Patti Constr. Co., 1340 Admiral St., Blvd., Kansas City, Mo.; MacDonald Constr. Co., and MacDonald Inter-American Corp., 1310 S. Grand Blvd., St. Louis, Mo., and Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, CA $4,915,052, Sch. E, DEW Line installation, Inv. 57-60, Driftwood Bay (Alaska).

FOREIGN

HEAVY CONSTRUCTION—LB & CA

▲ Dorman Long (Bridge & Engineering) Ltd., Middlesex Borough, England, CA $2,338,000. bridge over Klang River, MALAYA. Govt. Federation of Mayala, Juala Lampur. Coode & Partners, London, England, engrs. CD 8/24.

PROPOSED PROJECTS

WATER SUPPLY

▲ N. Y., Brockport—Village, Village Hall, water expansion program. $1,700,000.

▲ Tex., Midland—City, City Hall, Mar. 9, bond election cancelled WW $2,200,000. CD 3/8.

SEWERS, WASTE DISPOSAL

▲ Kan., Wichita—City, bond election Apr. 2, sewage treatment plant, south of Wichita on Arkansas River, $7,000,000. Black & Veatch, 1500 Meadow Lake Parkway, Kansas City 14, Mo., engrs.

▲ Mass., Wilmington—Town, sewerage collection sys. $3,335,000.

▲ Mich., Pontiac—City, Ada R. Evans, clk., special election May 20 to approve a one mill tax for financing sewage disposal plant, treatment facilities. $2,637,000. Lewis Wrenn, city engr. CD 1/22.

▲ N. Y. Rochester—Monroe Co. Sewer Agency, Court House, Gates-Chili-Ogden County Sewer Dist. $7,800,000.

▲ O., Cincinnati—City, City Hall, Contract No. 7, Millcreek Sewerage Works, incl. pump station, grit chambers, chlorination, $7,000,000; Contract 8, Millcreek Sewerage Works, incl. primary settling tanks, chemical bldg., sludge pump bldg. $3,500,000, Havens & Emerson, Leader Bldg., Cleveland, consult. engrs.; East Branch No. 1, Muddy Creek interceptor $450,000; West Branch Muddy Creek interceptor, $450,000; Mt. Auburn Relief Sewer in Dorchester Ave. $105,000; Este Ave. sewer from Chickering to Center Hill $425,000; Daytona Ave. and Harrison Ave. section of Westwood Relief Sewer No. 3, $210,000; sanitary sewers and pump for Mt. Washington $200,000; sewering ravine along Ridge Ave. from Northam to Duck Creek, $135,000. T. J. Montgomery, city engr. CD 11/5/54.

▲ O., Cincinnati—City, City Hall, Muddy Creek Sewage Disposal Plant, power-service bldgs., admin. bldg., sludge disposal tank, pumping station. $3,000,000. Havens & Emerson, Leader Bldg., Cleveland, O., consult. engrs. Art Caster, c/o owner, sewage disposal engr. CD 10/26/55.

▲ O., Perrysburg—Village, Village Hall, sewage disposal sys. area south of Grassy Creek, local sewer lines to tie into interceptor along Grassy Creek. $1,008,000. Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, consult. engrs. CD 11/14/55.

▲ Tex., Midland—City, City Hall, cancelled Mar. 9, bond election, sanitary sewerage system. $1,000,000. CD 3/7.

BRIDGES

▲ O., Youngstown—Comrs. Mahoning Co., Court House, Center Street Bridge. $1,000,000. Samuel Gould, Jr., county engr. Work to start this year. CD 3/15/55.

STREETS AND ROADS

▲ GEORGIA—State Hy. Dpt., Augusta,
Fulton and Douglas Counties—22.5 mi. limited access road from Atlanta to Douglasville $28,000,000. J. E. Greiner Co., 1106 N. Charles St., Baltimore, Md., consult. engr.

▲ N. Y., Mineola—County Executive, Nassau Co., Old County Court House, wid'n., straightening, resurf. Franklin Square Rd. from Southern State Parkway to Foster's Brook, Valley Stream. $200,000; Merrick Rd. from Grove St. east to Meadowbrook Parkway, Freeport, $400,000; Old Court House Rd. from North Hempstead Turnpike south for 1.03 mi., North Hills, $500,000; Bellmore Ave. from Jerusalem Ave. north to Barnum Ave. East Meadow, $480,000; Front St. from Hempstead-Farmingdale Turnpike easterly to Franklin Ave., Hempstead, $490,000; Old Country Rd. from Meadowbrook State Parkway easterly to Barnum Ave., Westbury, $750,000; Jerusalem Ave. from Uniondale Ave. east to Newbridge Rd., Hempstead, $1,250,000; Long Beach Rd. from Wauken Ave. south to Austin Blvd. Oceanside, $650,000; Austin Blvd. from Long Beach Bridge Plaza north to Long Beach Rd., Island Park, $175,000; Carman Ave. from Hempstead-Farmingdale Turnpike to Old Country Rd., East Meadow, $700,000.

▲ OHIO—Dpt. Hys., Columbus,
Franklin, Pickaway, Madison, Fayette and Clinton Counties—freeway between Columbus and Wilmington Road will replace proposed North-South Toll Road, FAI Project. Elmer S. Barrett & Assocs., Box 372, Chillicothe, O., consult. engr. will select best route. CD 3/22/54.

▲ O., Cincinnati—City, City Hall, widening Boudinot Ave. from Daytona to Harrison Ave. $185,000; exten. Erkenbrecher Ave. from Vine to Jefferson Sts., viaduct over Reuther St. Two alternative plans $1,095,000 and $1,160,000; imprv. Laidlaw Ave. and Elizabeth Pl., $121,000. widening Liberty St. from Dudley to Linn St. $113,000; widening Linn St. from Court St. to Lincoln Park Dr., $158,000; widening Linn St. from Lincoln Park Dr. to Liberty St., $137,000; relocation Red Bank Rd. from Madison Rd. to Erie Ave. $275,500; widening, paving Warsaw Ave. 500 ft. north of State to Wilder Aves. $264,528. CD 11/5/54.

▲† OREGON—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland,
Benton Co.—grading 7 mi. South Fork Alsea Rd. $280,000, Bids in July.
Clackamas Co.—stockpiling 5.8 mi. Mt. Hood Hy., $200,000, Bids in June.
Coos Co.—grading 17 mi. Burnt Mountain Rd., $1,000,000, Bids in July.
surf. 6.7 mi. Middle Creek Rd., $225,000, Bids in August.
surf. 2.9 mi. North Fork Middle Creek Rd., $75,000, Bids in August.
Douglas Co.—grading 15 mi. Camp Creekroad, $725,000, Bids in May.
grading 8 mi. Wsin Sisters Rd., $400,000, Bids in April.
grading 14 mi. Cow Creek Rd., $500,000, Bids in April.
grading 4.5 mi., constr. bridge on Buckeye Creek Rd., $200,000, Bids in May.
grading, surf. 4.9 mi. Diamond Lake Hy. $350,000, Bids in June.
grading 2 mi. Esmond Creek Rd., $130,000, Bids in September.
grading 11 mi. Middle Creek Rd., $100,000. Bids in July.
grading 8 mi. Days Creek Rd., $295,000, Bids in August.
grading, surf. 5.5 mi. Umpqua Hy., $700,000, Bids in April.
Grant Co.—grading, surf. 2.5 mi. Pendleton-John Day Hy., $200,000, Bids in May.
Jackson Co.—grading 16 mi. West Fork Evans Rd., $550,000, Bids in June.
Lane Co.—stockpiling on Whitaker Creek Rd., $150,000, Bids in September.
grading 6 mi. Congdon Creek Rd., $300,000, Bids in June.
Linn Co.—grading 5 mi. constr. bridge on Scar Mt. Road, $300,000, Bids in March.
surf., oiling 4.4 mi. Belknap Springs Hy. $430,000, Bids in August.
Tillamook and Yamhill Counties—clearing 10 mi. along Nestucca River, $350,000, Bids in June.
Tillamook Co.—grading 0.8 mi. Oregon Coast Hy., $670,000, Bids in August.
Union Co.—grading 7 mi. Ukiah-Starkey Hy., $350,000, Bids in April.

Brookfield, Wis. high school gymnasium Rilco Arches 100'-4" in span are spaced 22'-9" O.C. Architects: Grassold-Johnson and Associates, Milwaukee. Contractor: Klug and Smith Company, Milwaukee.

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Wheeler Co.—grading, surf. 4 mi. Heppner-Spray Hy., $250,000. Bids in September. F. E. Andrews, c/o owner, engr.

▲† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Juneau, constr. hy. from Dillingham to Aleknagik, $80,000; from Houston to Willow Road, $300,000; seal coating Richardson Hy. $431,000; imprv. Chena River Rd., $250,000; extending Steese Hy. to Fox, $490,000; seal coating Alaska Hy., $180,000; completing constr. of Taylor Hy. incl. boundary Branch, $200,000. paving 5.01 mi. Sitka Hy. $125,000. grading 5.2 mi. Wrangell Hy. $615,000; grading 1.5 mi. Douglas Hy. $300,000; farm, access and industrial roads, $400,000; reconstr. danger spots on paved hys. and imprvs. existing gravel roads $700,000; imprv. Glacier Hy., Tee Harbor to Eagle River in Juneau area, $1,275,000; hy. from Nome to Kougarok, $600,000; imprv. Sterling Hy. on Keani peninsula, $3,215,000; extending Copper River Hy. $700,000; constr. road from Livengood to Eureka, $600,000. imprv. Fairbanks-Nenana Hy. $2,046,000; imprv. Tongass Hy. from Clover Pass to Lunch Creek $525,000; constr. Mitkof Hy. Power House to Deep Landing $600,000; widening Denali Hy. near Anchorage, $380,000. paving in Seward, $250,000; paving in Palmer, $200,000. Work to start this year. A. F. Ghiglione, acting regional dir.

AIRPORTS

▲ **Mo., Kansas City**—OFFICE—City, Ronald M. White, City Aviation Comn., City Hall, passenger office and operations bldg. for municipal air terminal. $1,988,600. Cooper, Robinson, Carlson & O'Brien, 418 Commerce Bldg., Kansas City, Mo., engrs. CD 8/12/52.

LATIN AMERICA

▲ **Mexico, Tlaxcala**—Sria. de Recursos Hidraulicos P. de Reforma, 69, Mexico City, plans irrigation dam, Xaltocan, $1,440,000.

PUBLIC BUILDINGS

▲ **Ark., Little Rock**—SCHOOL—V. T. Bloosom, supt. Schools, School Bd., 800 Louisiana St., plans by Trapp, Clippard & Phelps, 713 W. 2 St., Little Rock, high school. $1,500,000. CD 1/14/53.

▲ **Ark., North Little Rock**—HOSPITAL—City, City Hall, voted $750,000 bonds Feb. 27, hospital, $2,177,588.

▲ **Calif., Atwater**—SCHOOLS—Atwater Elementary School Dist., P. O. Box 6, plans by Kaestner & Kaestner, 1115 I St., Modesto, elementary school, North Site School. $467,287. $1,200,000 bonds voted Feb. 19, schools and existing schools addns. CD 2/14.

▲ **Calif., Burbank**—PLANT—City, City Hall, voted $4,500,000 bonds Feb. 26, finance initial unit of steam electric generating plant at Olive and Lake Sts. $8,000,000.

▲ **Calif., Burlingame**—HOSPITAL—Peninsula Hospital Dist., 1783 El Camino Real, San Mateo, voted bonds Mar. 8, hospital addn. $3,950,000. Stone, Malloy, Marraccini & Patterson, 619 California St., San Francisco, archts. CD 1/23.

▲ **Calif., Fontana**—SCHOOLS—Fontana Unified School Dist., Fontana, bond election May 17, finance addns. to existing Junior High Schools and constr. new one. $5,000,000. CD 3/7.

▲ **Calif., Fullerton**—SCHOOLS—Fullerton High School & Junior College Dist., and Fullerton Elementary School Dist., Fullerton, voted $12,525,000 bonds Mar. 5, schools. CD 3/14/55.

▲ **Calif., Long Beach**—HARBOR DEPT ADMINISTRATION—City Bd. Harbor Comrs., 1333 El Embarkadero, Long Beach, plans by James R. Friend, 708 Kress Bldg., and Warren Dedrick, 110 W. Ocean Blvd., 7 story, 120,000 sq. ft. harbor dept. admin. bldg., Pier A East. $2,643,000. CD 2/14/56, under unclassified.

▲ **Calif., Marysville**—SCHOOL—Marysville Union High School Dist., 18 and B Sts., bond election May 17, high school in Linda Area south of here. $1,900,000. CD 12/13.

▲ **Calif., Paradise**—SCHOOLS—Paradise Unified School Dist., c/o Supt., Paradise, bond election May 17, elementary school expansion and high school expansion. $1,050,000. CD 6/7.

▲ **Calif., San Francisco**—DORMITORIES—State Div. Architecture, P. Wks. Bldg., 1120 N St., Sacramento, 3 dormitories on campus, San Francisco State College, $2,261,000.

▲ **Calif., Upland**—SCHOOL—Chaffey Union High School Dist., 5th and Euclid Sts., Ontario, plans by Neptune & Thomas, 1500 W. Colorado St., Pasadena, high school. $1,600,000.

▲ **Colo., Colorado Springs**—SCHOOL—James A. Talbott, supt. Schools El Paso County District No. 3, 209 Leta Dr., plans by Carlisle B. Gay, Exchange Bldg., elementary school. (Colo-58-C-505-A8) Widefield $1,153,000.

▲ **Colo., Denver**—CITY HALL, etc.—City and Denver Co., City & County Bldg., city hall and fire and police headquarters annex. $6,000,000.

▲ **Colo., Denver**—HOSPITAL—City and Denver Co. City & County Bldg., two wings addn. to Denver General Hospital. $4,250,000.

▲ **Conn., Enfield**—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Sherwood, Mills & Smith, consult. engrs-archts., 65 Broad St., Stamford, buildings at Osborn Prison Farm to replace existing barrack type buildings. $1,000,000. CD 10/29.

▲ **Conn., Greenwich**—HIGH SCHOOL—Town, high school, Old Greenwich. $2,500,000.

▲ **Ga., Athens**—CHEMISTRY, etc.—State Bd. Regents, 244 Washington St. S. W., Atlanta, chemistry bldg. $2,358,773; animal science bldg., $1,316,312; fine arts annex, $500,000, at University of Georgia.

▲ **Ill., Highland Park**—School Dist. 108, 711 Lincoln Ave. W., plans by Childs & Smith, 20 N. Wacker Dr., Chicago, Red Oak Intermediate School, Rosemary Rd. and Red Oak Lane. $1,500,000.

▲ **Mass., Natick**—SCHOOL—Town, E. D. Woodbury, Supt. Schools, Junior High School. $1,000,000.

▲ **Mich., Pontiac**—HOSPITAL—City, Ada R. Evans, clk., special election May 20 to approve one mill tax, Pontiac General Hospital addn., West Huron St. $1,500,000, Leo J. Heenan; 15 Carlton Court, Pontiac, archt.; parking facilities at hospital. $350,000, Lewis M. Wrenn, city engr.

▲ **Mich., Tecumseh**—SCHOOL—Bd. Educ., voted $8,500,000 mill levy Mar. 4 for high school addn., 4 elementary schools, conversion of Central Grade School to Junior High School, completion of two elementary schools. $1,900,000. Warren Holmes Co., 2200 Michigan National Tower, Lansing, archts. CD 2/21.

▲ **Minn., St. Louis Park**—SCHOOL—Bd. Educ., V. S. Formo, clk., high school at Texas Ave. and W. 22 St. $2,250,000. CD 10/27/53.

▲ **Neb., Fremont**—HIGH SCHOOL—Bd. Educ., $1,550,000 bond election Apr. 2, high school. CD 4/9.

▲ **Neb., Omaha**—SCHOOL—Bd. Educ., 3902 Davenport St., plans by John Latenser & Sons, 1307 Farnam St., South High School addn. $1,800,000. CD 11/28/55.

▲ **N. J., Morristown**—SCHOOL—Bd. Educ., Twp. of Morris, high school, Morris Twp. $1,250,000.

▲ **N. Y., Farmingdale**—SCHOOL—Bd. Educ., referendum vote on May 18, high school on 30 acre site south of Woodward Parkway School, addn. to present high school, $3,000,000; addn. to East Farmingdale School and Woodward Parkway School, $800,000.

▲ **N. Y., Lawrence**—SCHOOL—Union Free School Dist. No. 15, project approved by referendum Feb. 14, high school on 24 acre tract on former Cedarhurst Stadium site. $5,000,000. CD 1/25.

▲ **N. Y., Lynbrook**—SCHOOL—Bd. Educ., referendum vote in April, high school, Union Ave. $4,500,000. CD 11/15/54.

▲ **N. Y., Manhasset**—ARMORY—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, armory for National Guard, $1,500,000.

▲ **N. Y., New York**—COURTS—City, Dpt. P. Wks., Municipal Bldg., Zone 7, plans by William Lescaze & Matthew W. DelGaudio, 211 E. 48 St., Zone 17, Proj. PW-84, city and municipal courts bldg. on block bounded by White, Lafayette, Franklin, and Centre Sts. $11,780,000. CD 10/16/46.

▲ **N. Y., New York**—MORGUE—City, Dpt. P. Wks., Municipal Bldg., Zone 7, plans by DeYoung, Moscowitz & Rosenberg, 205 E. 42 St., Zone 17, 6 story morgue, First Ave. and 30 St. $3,000,000.

▲ **N. Y., New York**—POLICE ACADEMY—City, Dpt. P. Wks., Municipal Bldg., plans by Kelly & Gruzen, 80 Fifth Ave., Zone 3, P. O. 77, police academy on 20th St. east of Third Ave. $6,000,000. CD 9/28/55.

▲ **O., Cleveland**—SCHOOLS—Cleveland Bd. Educ., 1380 E. 6 St., Zone 14, plans by Arthur Baer, c/o owner, Garden Valley School $800,000; Dunham Relief School $1,442,750; Glenville area elementary school $956,000. CD 11/14/50.

▲ **O., Kent**—SCHOOL—Bd. Educ., Lewis L. Burkhart, supt. of Schools, $650,000 bond election May 7, high school. $1,530,000. CD 1/4/56.

▲ **O., St. Bernard**—POWER PLANT RENOVATION—City, City Bldg., $1,500,000 bond election Apr. 30, renovating electric power plant. CD 9/29/54.

▲ **Ore., Portland**—COLISEUM, CONVENTION CENTER—City, City Hall, plans by Skidmore, Owings & Merrill, 100 W. Monroe St., Chicago, Ill., coliseum and convention center. $8,000,000. CD 2/12.

▲ **Pa., Irwin**—SCHOOL—North Huntington Twp. School Dist. plans by Hunter Caldwell & Rea, 3601 Fifth Ave., Altoona, Junior High School, Mocking Bird Hill. $2,000,000.

▲ **Tex., Odessa**—HOSPITAL—Ector Co., c/o Comrs. Court, Courthouse, plans by L. F. Crockett & Assocs., archts. & consult. engrs., 506 N. Lincoln St., 240-bed county hospital addn. to Medical Center Hospital, $2,600,000. CD 10/3.

▲ **Wash., Seattle**—CLASSROOM, etc.—University of Washington, Seattle, Zone 5, classroom and office bldg. $2,115,000. Work to start this year.

▲ **Wash., Spokane**—HOUSING UNITS—Purch. & Contg. Officer, Geiger Field, Spokane, plans by L. A. Daly Co., Securities Bldg., Seattle, Zone 1, 228 family housing units (Capehart) at Geiger Field. $2,500,000. Bids late this year.

▲ **Wis., King**—INFIRMARY—State Dpt. Veteran's Affairs, State Capitol, Madison, infirmary. $2,000,000. R. D. Culbertson, Madison, state engr.

COMMERCIAL BUILDINGS

▲ **Calif., Sacramento**—STORE—Montgomery Ward, 619 E. Chicago Ave., Chicago, Ill., 55,000 sq. ft. with bsmt., store, incl. roof parking facilities, 9th and L Sts. $2,000,000.

▲ **Calif., Salinas**—MOTEL—Rickey & Pick, c/o Ernest Kump & Assocs., archts., 450 Ramona St., Palo Alto, motel, incl. 100 rooms, banquet room, cocktail lounge, swimming pool, dining room, $2,500,000.

▲ **Conn., Hamden**—HOUSES—Linehan Development Corp., N. Ridgeland Rd., Wallingford, 80 houses, Paradise Ave. $1,400,000.

▲ **Conn., Orange**—BOWLING ALLEY, etc.—Manero's Steak House of New Haven, Inc., c/o Abraham Abel, 8 King St., Port Chester, N. Y., 52-alley bowling arena, $750,000; enlarge restaurant, $1,000,000.

▲ **Conn., Wethersfield**—HOUSES—Liberty Homes, Inc., 132 Cedar St., plans by Edward J. Murphy, 132 Cedar St., 200 houses "Fox Ridge" Maple St. $3,360,000; 33 houses, "Timber Village", $787,050. E. C. Fresen, 81 Murphy, 132 Cedar St., consult. engr.

▲ **Del., Wilmington**—RESTAURANT, etc.—Harry B. Bissell, Jr., 4919 Governor Printz Blvd., restaurant, motor lodge, swimming pool, $1,000,000.

▲ **Ill., Palatine**—OFFICE—Pure Oil Co., 35 E. Wacker Dr., Chicago, plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, office, N. of Golf Rd. between Rohlwing and Meacham Rds., $5,000,000.

▲ **Ind., Chesterton**—HOMES—John Read, Wilson Ave., 160 homes and site development. $2,000,000. Chester L. Stemp, 132 N. Calumet St., consult. engr.

▲ **Md., Baltimore**—OFFICE—Lexington-Charles Corp., c/o Charles H. Steffey, 20 E. Lexington St., Zone 2, plans by Tyler, Ketcham & Myers, 513 Park Ave., Zone 1, 10 story, 60x61 ft., brick, steel, stone office, Lexington and Charles Sts. $1,500,000.

▲ **Mich., Marysville**—SHOPPING CENTER—Owner, c/o Charles M. Valentine, archt., 1985 Gratiot Blvd., shopping center, Gratiot and Huron Sts., $3,500,000.

▲ **Minn., Bloomington** (P.O. Minneapolis)—SHOPPING CENTER—R. I. Peterson, Osseo, and C. E. Turner, 4316 Wooddale Ave., Minneapolis, plans by Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, 450,000 sq. ft. shopping center, incl. forty-two 1 and 2 story bldgs., E. of Penn Ave. and S. of Hy. 100. $8,000,000. Grading on site expected to start this Spring.

▲ **Minn., Minneapolis**—BANK—First National Bank of Minneapolis, G. Murray, pres., Fifth St. and Marquette Ave., plans by Thorshov & Cerny, 400 Metropolitan Bldg., and Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Ill., multi-story bank and office in block enclosed by Fifth and Sixth Sts., south and Marquette and Second Aves. Approx. $14,000,000. CD 11/1/55.

▲ **Minn., Minneapolis**—HOSPITAL—Northwestern Hospital, 810 E. 27 St., plans by Magney, Tusler & Setter, 303 Roanoke Bldg., 7 story hospital addn. $3,000,000.

▲ **Mo., Kansas City**—APARTMENT—Lewis Kitchen, R. A. Long Bldg., Kansas City, Mo., plans by Kivett & Myers & McCallum, 1016 Baltimore Ave., Kansas City, Mo., Title I, 11 story apartment, swimming pool, Ninth and Penn Sts., River House. $2,250,000.

▲ **N. J., Bound Brook**—MEDICAL CENTER—Bd. Trustees, Bound Brook Hospital, 507 Church St., medical center, Green Brook Twp. $1,500,000.

▲ **N. J., Camden**—HOSPITAL—Cooper Hospital, Sixth and Stevens Ave., plans by George Von Uffel, 30 Warwick Rd., Haddonfield, two wings to existing hospital, $2,440,000. CD 3/4.

▲ **N. J., Montvale**—OFFICE—Curtiss-Wright Corp., Passaic and S. Main Sts., Wood-Ridge, 1 story, ranch-style office adjacent to Garden State Parkway near proposed Grand Avenue extension, $1,000,000.

▲ **N. Y., Forest Hills**—OFFICE—Pickman Realty & Constr. Co., c/o Samuel Arlen, 200 W. 72 St., New York, Zone 23, 16 story office, 118-21 Queens Blvd., $1,000,000.

▲ **N. Y., Hartsdale**—SCHOOL—Archdiocesan Bldg. Comn., 451 Madison Ave., New York, Zone 22, plans by McCoy & Blair, 4 Chatsworth Ave., Larchmont, Marie Regina High School at Keats Ave. and West Hartsdale Rd. $1,000,000. CD 2/18.

▲ **N. Y., Loudonville**—DORMITORY—Sienna College, Loudonville, plans by Toole & Angerame, 283 Washington Ave., Albany, dormitory, $1,500,000.

▲ **N. Y., Nanuet**—SCHOOL—Archdiocesan Bldg. Comn., 451 Madison Ave., New York, Zone 22, plans by Edward Fleagle, 18 S. Broadway, Yonkers, Albertus Magnus High School adjacent to St. Anthony Church, Rte. 59, $2,000,000. To go ahead in Summer 1957. CD 2/18.

▲ **N. Y., New York**—BANK, etc.—First National City Bank, 55 Wall St., Zone 5, plans by Pellheimer & Wagner, 155 E. 42 St., Zone 17, altering bank and office, Madison Ave. and 42 St. $1,250,000.

▲ **N. Y., New York**—APARTMENT—45 E. 72 St. Corp., 825 Stone Ave., Brooklyn, Zone 12, plans by Philip Birnbaum, 12 E. 48 St., Zone 17, 19 story apartment, 45 E. 72 St., $2,000,000. Project revised to a larger bldg. CD 1/14.

▲ **N. Y., Syracuse**—HOSPITAL—Syracuse Memorial Hospital, 736 Irving Ave., 3 story hospital addn., 10 story hospital addn. $4,700,000.

▲ **O., Cleveland**—NUCLEAR CENTER—Case Institute Technology, 10900 Euclid Ave., Zone 6, Case Industrial Nuclear Center, near here. $7,000,000. Austin Co., 16112 Euclid Ave., Cleveland, Zone 12, consult. engr. CD 11/17/55.

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▲ **O., Delaware**—SEMINARY—Methodist Church, Falls Bldg., Nashville, Tenn., seminary, Butler Farm 3 mi. south of here, $4,000,000.

▲ **Pa., Abington**—RESIDENTIAL DEVELOPMENT—George L. Betz, Abington, 240-unit residential development, Welsh and Valley Rds. $7,000,000. 60-acre tract.

▲ **Pa., Phila.**—BANK REMODELING, etc.—Broad Street Trust Co., S. Penn Square, plans by Thalheimer & Weitz, 1325 Walnut St., bank remodeling and modernization. $1,000,000.

▲ **Pa., Pittsburgh**—LIBRARY, etc.—Carnegie Institute of Technology, Schenley Park, Pittsburgh, plans by Lawrie & Green, 321 N. Front St., Harrisburg, 2 story, bsmnt., brick, block library, $1,200,000; plans by Franklin Douden & Assoc., 522 Century Bldg., two 3 story, brick, block, steel apartment bldgs., Forbes and Beeler Sts., $600,000; plans by Chas. M. & Edw. Stotz, 502 Bessemer Bldg., 1 story, 18x205 ft., 35x65 ft., brick, block theater drama hall, $1,250,000; plans by Celli & Flynn, 335 Shaw Ave., McKeesport, 2 story, bsmnt., brick, block school of Printing Management, $1,200,000; 2 story, bsmnt., 70,000 sq. ft. engineering and science bldg., $1,000,000.

▲ **Pa., Pittsburgh**—OFFICE—Town Development, Inc., 302 Carlton House, 5 story, bsmnt., concrete, steel Parkway Office Center, Greentree, $4,000,000.

▲ **Tex., Fort Worth**—SHOPPING CENTER—R. E. Dumas Milner, 3691 Canton Rd., Jackson, Miss., plans by John Wesley Jones, 6401 Camp Bowie Blvd., Milner Shopping Center, with underground parking, incl. 10 story office, motel, stores, $7,000,000. Hedrick & Stanley, T&P Bldg., consult. engrs. CD 10/2.

▲ **Wis., Milwaukee**—SHOPPING CENTER—Wildwood Shopping Center, c/o Karl Van Leuven and Victor Gruen & Assoc., 2100 Industrial Bank Bldg., Detroit 26, Mich., consult. archts.-engrs., shopping center on 80-acre site in western section. $7,500,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Oakland**—GARAGE—Capitol Co., 1 Powell St., San Francisco, plans by Stone, Malloy, Marraccini & Patterson, 619 California St., San Francisco, 9 story, structural steel, rein. con. garage, $1,000,000. Alf. J. Ryan, 1340 Glenarm Pl., Denver, Colo., consult. engr.

▲ **Calif., San Leandro**—PLANT—Ladys Choice Foods Corp., 1237 Minnesota St., San Francisco, 250,000 sq. ft. plant and marshalling yard. $1,000,000. CD 11/7/47.

▲ **Ind., East Chicago**—REFINING FACILITIES—Cities Service Oil Co., Bartlesville, Okla., refining facilities addn. $4,000,000.

▲ **N. M., Albuquerque**—PLANT—Ideal Cement Co., Denver National Bank Bldg., Denver 2, Colo., 1,000 bbl. annual capacity single kiln cement plant. $10,000,000-$12,000,000.

▲ **O., Bedford Heights**—RESEARCH, etc.—Thompson Product, Co., 2355 Euclid Ave., Cleveland, Zone 17, plans by Outcalt, Guenther & Assoc., 13124 Shaker Sq., Cleveland, Zone 20, electronic research and engineering center. $3,000,000. CD 10/23.

▲ **O., Hudson**—PLANT—General Motors Corp., Euclid Div., 1361 Chardon Rd., Cleveland, Zone 17, 3,500,000 sq. ft. road building equip. mfg. plant. Est. $35,000,000. Argonaut Division c/o owner, consulting engrs.

▲ **O., Solon**—PLANT—Container Corp. of America, 38 S. Dearborn St., Chicago 3, Ill., folding carton mfg. plant, 23-acre site on Solon and Cochrane Rds. $1,000,000.

▲ **Okla., Oklahoma City**—PLANT—Western Electric Co., 195 Broadway, New York, N. Y., electronic machine computing plant at Reno and Council Rd. $35,000,000.

▲ **Okla., Wynnewood**—REFINERY—Kerr-McGee Oil Industries Inc., Kerr-McGee Bldg., Oklahoma City, addnl. oil refinery expansion. $4,000,000. J. F. Kelley, c/o owner, engr. CD 2/18/54.

▲ **Alaska**—ALUMINUM PLANT—Aluminum Co. of America, Alcoa Bldg., Pittsburgh, Pa., project abandoned, aluminum plant near Skagway Taiya Valley District, incl. smeltering plant, 2 power plants, 13 mi. power tunnel, transportation facilities and community development with housing, schools, churches, stores, etc. $400,000,000. CD 8/25/52.

UNCLASSIFIED

▲ **California**—POWER LINES, etc.—Pacific Gas & Electric Co., 245 Market St., San Francisco, power lines and sub-station vicinity of Sonoma, Sonoma Co. $4,000,000.

▲ **Calif., Los Angeles**—PARKS, etc.—City, City Hall, $39,500,000 bond election May 28, expansion city parks and recreation system.

▲† **Michigan**—NIKE BASE—U. S. Eng., 600 E. Jefferson St., Detroit, Nike Base north of Monroe, auxiliary site formerly Grosse Isle Naval Station field, Monroe. $2,000,000.

▲ **Pa., Phila.**—AQUARIUM—City, Dpt. Procurement City Hall Annex, aquarium. $1,500,000. Bids will be asked soon, successful bidder will build aquarium and operate it for 30 years under a lease arrangement. CD 2/27/56.

▲ **Washington and British Columbia**—TELEPHONE NETWORK—Pacific Telephone & Telegraph Co., 3 and Seneca Sts., Seattle, Zone 1, and British Columbia Telephone Co., 768 Seymour St., Vancouver, B. C., long distance telephone network between Seattle, Wash. and Vancouver, B. C., incl. steel towers and antennas on 6 mountain tops. $1,500,000. Work to start this summer.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 8 Connecticut

STREETS AND ROADS

April 2 Massachusetts — April 8, 11 Connecticut

▲† **Vermont**—BA 4/16—U. S. Eng., 150 Causeway St., Boston, Mass. Ball Mountain Dam and appurtenant structures, West River, CIVENG-19-016-57-73. Est. over $5,000,000. Plans deposit $25. CD 3/6.

BUILDINGS—BA

▲ **Conn., Meriden** — SCHOOL — BA 4/15 — Town, Bd. Educ., 22 Liberty St. constructing East Side High School. $2,883,000. Plans deposit $60. CD 11/26.

▲ **Conn., Middletown**—HOSPITAL—BA 4/17—State P. Wks. Dpt., 165 Capitol Ave., Hartford, intensive treatment building, Conn. State Hospital. $5,000,000. Plans deposit $100. CD 2/26.

BUILDINGS—SLC

Conn., Meriden—FACTORY—Hinde & Dauch Paper Co., 239 Park Ave., New York, N. Y., soon lets contract 1 story, 87,000 sq. ft., brick, steel and concrete corrugated box factory. $800,000. Gibbs & Hill, Inc., Penn. Sta., New York, N. Y., engr. and archt. CD 10/26.

HEAVY CONSTRUCTION—LB & CA

CONNECTICUT—State Hy. Dpt., State Office Bldg., Hartford.

Frouge Constr. Co., Inc., 141 North Ave., Bridgeport, Conn. and D'Addario Constr. Co., 513 Boston Ave., Bridgeport, Conn., CA **$816,268**, (9 bidders), Proj. 96-70 approx. 3,648 lin. ft. grading, drainage, pavement on relocation of Rte. US 6, incl. box culverts and two span rolled beam bridge, FAP in-41 (12), Newtown. Bids Jan. 28. CD 1/30, under LB.

BUILDINGS—LB & CA

▲† **Davison Constr. Co., Inc.**, 1306A Elm St., Manchester, N. H. LB **$14,578,000**. family HOUSING Portsmouth Air Force Base, IFB 27-604-57-3, PORTSMOUTH, N. H. Purch. & Contg. Officer, Air Force Base, Portsmouth, N. H. Bids Mar. 19. CD 3/12.

Sawyer Constr. Co., Inc., Blanchard Rd., Burlington, Mass. CA **$944,885**. Central Intermediate SCHOOL, Concord and Westminster Sts., HAVERHILL, MASS. City, Supt. Pub. Bldgs., Haverhill, Mass. CD 3/7, under LB.

▲ **A. E. Stephens Co.**, 1200 Main St., Springfield, CA **$1,400,000**, OFFICE, 1049 Asylum Ave., HARTFORD, CONN., 1049 Asylum Ave. Corp., 2 Wall St., New York, N. Y. Awarded Mar. 15. CD 7/26.

▲ **Mamapart Bros. House Wrecking Co.**, Plainville, Conn., CA **$1,000,000**, modernize, renovating vacant 9 story Wise-Smith DEPARTMENT STORE, 915 Main St., HARTFORD, CONN. E. J. Korvette, Inc., 12 E. 46 St., New York, N. Y. Awarded Mar. 15. CD 2/26.

Barba & Cinmino, Inc., 57 Grandview Ave., Hamden, Conn., CA **$833,500**, Proj. BI-R-122B, FINE ARTS BLDG., New Haven State Teachers College, NEW HAVEN, CONN., State P. Wks. Dpt., 165 Capitol Ave., Hartford, Conn. Bids Feb. 13. CD 2/21, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 2 New Jersey — April 12 Pennsylvania

STREETS AND ROADS

April 2, 9 New Jersey — April 12 Pennsylvania

▲† **N. Y., Rome**—HYDRANT REFUELING—BA 4/16—U. S. Eng., 111 E. 16 St., New York, Zone 3, hydrant refueling at Griffis Air Force Base, $1,000,000-$3,000,000, Greenberg & Ames, 303 Fourth Ave., New York, Zone 10, archts. CD 3/8.

HEAVY CONSTRUCTION—LB & CA

NEW YORK—**John W. Johnson**, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, bids opened 3/21.

N. Y.—**Westcott Construction Co.**, 52 No. Washington St., North Attleboro, Mass., LB **$2,221,477**, est. $2,302,000. (2 bidders) elimination of the Latham Traffic Circle by depressing Rte. 9 to run under Rte. 7, portions of both routes will be reconstructed as four-lane divided hys. and full traffic interchange facilities between the twin routes, involving 1.39 mi., Albany Co.

N. Y.—**A. B. C. Paving Co., Inc.**, 178 West Utica St., Buffalo, N. Y. LB **$203,910**, est. $221,000 (3 bidders) reconst. Staley Rd. on Grand Island from Base Line Rd. westward to the east service road on West River Parkway 2.27 mi., Erie Co.

N. Y.—**Frank Mascali & Sons, Inc.**, 120th St. & 31st Ave., Flushing, N. Y. LB $4,122,358, est. $4,491,000. (7 bidders) constr. 0.58 mi. six-lane divided depressed sect. of Prospect Expressway from 10th to Greenwood Aves. incl. constr. overpasses to carry 11th Ave. and Seeley St. over Expressway the building of pedestrian overpasses at 10th Ave. and Greenwood Ave. and constr. 1.31 mi., various roads, Kings Co.

N. Y.—**Stanley DiStefano Sons**, 594 Broadway, Watervliet, N. Y. LB **$297,156**, est. $363,000 (11 bidders) wid'n resurf. 5.87 mi. sect. of Rte. 255 from its intersection with Rte. 256 south of Scottsburg northward to Rte. 16 near Conesus, Livingston Co.

N. Y.—**Hendrickson Brothers Inc.**, 63 North Central Ave., Valley Stream, N. Y., LB **$1,844,450**, est. $2,118,000. (2 bidders) wid'n. 1.08 mi. sect. of Northern State Parkway into an eight-lane divided hy. from present terminus of Meadowbrook Parkway in vicinity of Glen Cove Rd. to Hillside Ave. village of Old Westbury and Westbury in the town of North Hempstead, incl. proj. 1.59 mi. access roads and building of grade separation structures at Hillside Ave. Jericho Turnpike and Glen Cove Rd., Nassau Co.

N. Y.—**Zara Contracting Co., Inc.**, Engel St., Hicksville, L. I., N. Y., LB **$1,776,974**, est. $1,784,000. (3 bidders) reconstr. 1.59 mi. sect. Pennisula Blvd. with four-lane divided c. conc. from Southern State Parkway to Hempstead-Farmingdale Turnpike (Rte. 24) incl. constr. of two small stream bridges and 0.31 mi. access roads, Nassau Co.

N. Y.—**S. J. Groves & Sons, Co.**, Syracuse, N. Y., LB **$9,710,333**, est. $11,122,000 (4 bidders) constr. 9.8 mi. six-lane divided sect. Penn-Canada Expressway and 8.53 mi. various access roads between Mattydale and Brewerton along east side of existing Rte. 11, incl. constr. of traffic interchange facilities at North Syracuse, building grade separation structures at Taft Rd., Church St., South Bay Rd., Rte. 31 and Mud Hill Rd. and abutments for 1,786 ft. long viaduct to carry the Expressway over Mattydale Oval, Onondaga Co.

N. Y.—**J. J. Haggerty, Inc.**, Westhampton Beach, L. I., N. Y., LB **$577,370**, est. $710,000. (4 bidders) wid'n. resurf. 2.7 mi. sect. Rte. 27 from Skimhampton Rd. eastward to Cranberry Hole near Amagansett, Suffolk Co.

N. Y.—**Camarco Contractors, Inc.**, P. O. Box 85, Carmel, N. Y., LB **$721,127**, est. $744,000. (1 bidder) reconstr. 2.72 mi. sect. of County Rd. 49 starting at Orange Co. line near Oakland Valley and extending northwestward to Hartwood, incl. constr. 3 span, 183 ft. long 24 ft. wide bridge over the Neversink River, Sullivan Co.

N. Y.—**Potter-DeWitt Corp.**, Pavilion, N. Y., LB **$873,482**, est. $896,000. (3 bidders) wid'n., resurf. 1.47 mi. sect. of Rte. 17 in vicinity of Horton's Crossing west of Owego, 1.58 mi. sect. of Rte. 17C from Owego's corporation line eastward and 1.88 mi. sect. of Rte. 17C immediately east of Campville, Tioga Co.

N. Y.—**Callanan Road Improvement Co.**, South Bethlehem, N. Y., LB **$672,712**, est. $768,000 (3 bidders) wid'n., resurf. 7.4 mi. sect. of Rte. 32 starting at Kingston city line and extending 20 ft. wide concrete route, Ulster Co.

N. Y.—**S. J. Groves & Sons Co.**, Syracuse, N. Y. LB **$4,446,837**, est. $5,035,000. (5 bidders) constr. 3.32 mi. sect. six-lane divided Penn-Canada Expressway and 1.01 mi. access roads along east side of existing Rte. 11 from Bartell Rd. east of Brewerton northward to Rte. 49 east of Central Square, incl. constr. traffic interchange at Bartell Rd. structure to carry Bartell Rd. over the Expressway and constr. substructure for 448 ft. steel arch bridge to carry the Expressway over western edge of Oneida Lake, Onondaga and Oswego Counties.

N. Y.—**Peckham Road Corp.**, 50 Harlem Ave., White Plains, N. Y., LB **$285,005**, est. $353,000. (4 bidders) b. conc., resurf. 30 ft. wide Rte. 32 from Cornwall-Woodbury town line northeastward 3.93 mi. to point near Orrs Mills, Orange Co.

N. Y.—**Stanley DiStefano & Sons**, 594 Broadway, Watervliet, N. Y., LB **$492,225**, est. $553,000. (6 bidders) resurf. 7.09 mi. sect. of Rte. 23 starting about 1 mi. east of South Berlin and extending eastward to Rte. 51 intersection in Morris, Otsego Co.

N. Y.—**Slattery Contracting Co., Inc.**, 46-16 54th Road, Maspeth, L. I., N. Y., LB **$5,$27,758**, est. $5,062,000. (2 bidders) constr. 1.87 mi. six-lane divided sect. of Horace Harding Expressway between 208 St. and Cloverdale Blvd., incl. constr. overpasses to carry Oceania Ave., Bell and Springfield Blvds. over the Expressway, pedestrian overpass at Cloverdale Blvd. and 2.91 mi. various access roads, Queens Co.

N. Y.—**L. S. Martin**, 406 Fulton St., Troy, N. Y., LB, **$427,546**, est. $453,000. (5 bidders) wid'n., resurf. 5.41 mi. sect. Rte. 96 starting at Ontario Co. line south of west junction and extending southeastward to intersection with Virginia St. in Waterloo, Seneca Co. CD 3/5.

NEW YORK—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, bids opened Mar. 21.

N. Y.—**Grow Construction Co., Inc., & Schact Steel Construction Co., Inc.**, 313 W. 53rd St., New York 19, N. Y. LB **$2,709,675**, est. $3,723,000 (14 bidders) constr. superstructure and piers for 26 span 1,786 ft. viaduct with elevated ramps to carry the Penn Canada Expressway over the Mattydale Oval, involving 0.43 mi., Onondaga Co.

N. Y.—No bids received 3/21/56. Est. **$1,963,000**. (No bidders.) constr. superstructure for 448 ft. steel arch bridge to carry Penn-Canada Expressway over Western Edge of Oneida Lake east of Brewerton, involving 0.17 mi., Oswego Co.

N. Y.—Merritt-Chapman & Scott Corporation, 260 Madison Ave., New York, N. Y. LB $3,458,240, est. $4,200,000 (2 bidder) constr. 5 concrete piers required for anchorage and support of main spans of suspension bridge to be built across St. Lawrence River connecting Chimney Point, north of Ogdensburg with Johnstown in Canada, the main spans of this international bridge will total about ½ mi. in length, the bridge incl. main spans and approach spans will be a little over a mile long when completed and will have a two-lane, 26 ft. wide roadway, St. Lawrence Co. (and Grandville, Ont., Canada).

N. Y.—**Camarco Contractors, Inc.**, P. O. Box 84, Carmel, N. Y. LB **$221,443**, est. $236,000 (6 bidders) reconstr. Rtes. 116 and 121 in vicinity of Titicus River crossing east of Salem Center, involving 0.47 mi., Westchester Co.

N. Y.—**Torrington Construction Co., Inc.**, P. O. Box 316, 999 So. Main St., Torrington, Conn. LB **$977,288**, est. $1,237,000 (4 bidders) wid'n. reconstr. 8.86 mi. sect. of Rte. 9 starting at Elizabethtown and exten. northward through Lewis to the intersection with town road to Reber, Essex Co.

N. Y.—**Collins Brothers Inc.**, 12 Tallmadge Pl., Mechanicville, N. Y. LB $794,424, est. $811,000 (1 bidder) reconstr. 2.26 mi. sect. Rte. 9 starting in vicinity of North Hudson-Elizabethtown town line near Underwood and exten. generally northward toward New Russia to a point about 1 mi. north of Rte. 9 and 73 intersection, Essex Co. CD 2/11 and 3/5.

N. Y.—**Camarco Contractors, Inc.**, Carmel, N. Y. LB **$141,774**, est. $150,000 (4 bidders) constr. new Rte. 116 bridge and approaches over Titicus River between North Salem and Connecticut State Line replacing the temporary structure built after floods of 1955 had destroyed the original bridge involving 0.21 mi., Westchester Co. CD 3/5.

▲ **New York**—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,

N. Y.—**Grefe & Brennan, Inc.**, 2477 Long Beach Rd., Rockville Center, N. Y. CA **$591,932**, reconstr. 2.81 mi. sect. of Rte. 25, 25A, and 111 from Jericho Turnpike northeastward to Moriches Rd. in St. James, Suffolk Co.;

N. Y.—**Weber Constr. Co., Inc.**, 133 Wall St., Schenectady, N. Y. CA **$1,447,966**, reconstr. 5.88 mi. sect. of Rte. 5-S with 24 ft. wide c. conc. starting at Rte. 160 intersection, incl. new bridge over Tarwileger Creek and relocation of 0.95 mi. railroad embankment, Montgomery and Schenectady Counties;

N. Y.—**John Arborio, Inc.**, West Cedar St., Poughkeepsie, N. Y. CA **$661,634**, reconstr. 1.61 mi. Rtes. 55 from Rte. 209, involving one 3-span 255 ft. bridge over Roondout Creek and two smaller stream bridges, Ulster Co.;

N. Y.—**Hornell Constr. Co.**, 212 Main St., Hornell, N. Y. CA **$757,109**, wid'n. reconstr. 2.2 mi. sect. of Rte. 19, and 0.65 mi. portion of Rte. 246 from Willetts Ave.-Genesee St. intersection northward to north line, Allegheny Co.;

N. Y.—**Potter-DeWitt Corp.**, Pavilion, N. Y. CA **$647,437**, reconstr. 5.37 mi. secondary road between Croghan and Indian River and constr. new three-span 180 ft. long bridge over Beaver River, Lewis Co.;

N. Y.—**The Lane Constr. Corp.**, 965 E. Main St., Meriden, Conn. CA **$5,813,377**, constr. 7.26 mi. four-lane divided sect. of new interstate Penn-Canada Expressway, incl. addnl. 5.24 mi. ramps and 1.55 mi. State Hy. work on Rtes. 3 and 11 incl. railroad grade separation over N. Y. Central R. R. near Kellogg Hill and four hy. overpasses at Old Rome State Rd., Massey Rd. and Arsenal St. and Kellogg Hill interchanges, Jefferson Co. Grand total $9,919,455. Bids Jan. 31. CD 2/1, under LB.

▲ **New York**—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,

N. Y.—**Booth & Flynn Co.**, 1942 Forbes St., Pittsburgh 19, Pa. CA **$2,670,260**, constr. 0.76 mi. portion of substructure for proposed high-level Fuhrmann Blvd. and Hamburg Turnpike (Rte. 5) viaduct over Union Ship Canal, incl. exten. from Ridge Rd. in Lackawanna northward to Tifft St., in Buffalo, Erie Co.;

N. Y.—**Binghamton Bridge & Foundation Co., Inc.**, R. D. No. 2, Endicott, N. Y. CA **$519,306**, three span 340 ft. bridge and approaches to carry Rte. 36 over Genesee River on northern edge of Mt. Morris, Livingston Co. Bids Jan. 31. CD 2/1, under LB.

▲ **Morse-Boulger Destructor Co.**, 80 Fifth Ave., New York 11, N. Y. LB **$1,879,147**. Betts Avenue Incinerator extension, 53 Ave. and 98 Lane, Queens Boro, NEW YORK, Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Mar. 13. CD 2/13.

▲† **Merritt-Chapman & Scott Corp.**, Standard Bldg., Cleveland, O. LB **$16,538,000**. (2 bidders) Sects. C, D, E, dredging South Cornwall Channel, incl. Sect. C, excavation Raquette Point, South Cornwall Channel St. Lawrence Seaway, St. Lawrence River for St. Lawrence Seaway Development Corp., CIVENG-30-023-57-56, NEW YORK. U. S. Eng., foot of Bridge St., Buffalo 7, N. Y. No bids received on entire project. Bids Mar. 4. CD 2/1;

Great Lakes Dredge & Dock Co., Morgan Bldg., Buffalo, N. Y. LB **$15,473,620** (1 bidder) Sects. A and B (New York);

S. J. Groves & Sons Co., Wesley Temple Bldg., Minneapolis, Minn. LB **$2,332,500** (6 bidders) Sect. C (New York).

▲ **Construction Aggregates Corp.**, 1 E. 42 St., New York 17, N. Y. CA **$1,267,890**. (4 bidders.) preparation of site for placing sanitation fill on islands north of Shore Parkway, incl. constr. timber bridge in Marine Park, Contr. B-57-356, BROOKLYN, N. Y. Comr. Parks, Dept. Parks, Arsenal Bldg., Central Park, 65 St. and Fifth Ave., New York 21, N. Y. CD 2/8, under LB.

▲ **Delma Engineering Corp.**, 1208 Wyatt St., New York 60, N. Y. LB **$1,867,705**. (3 bidders) constr. platform extensions to 79 and 86 St. Stations of Broadway-Seventh Avenue Line, Manhattan Boro, Contr.

C-119, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Mar. 15. CD 3/7.

▲† **Philsan Constr. Co.**, 152 W. 42 St., New York 36, N. Y. LB **$1,723,053.** (3 bidders.) runway paving at Niagara Falls Air Force Base, ENG-30-075-57-36, NIAGARA FALLS, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Mar. 20. CD 2/27.

▲ **Gramercy Constr. Co.**, 114 Liberty St., New York, N. Y. CA **$1,267,882.** Contr. NA-380.003 constr. superstructure for Hangar No. 14 at Newark Airport, NEWARK, N. J. New York Port Auth., 111 Eighth Ave., New York 11, N. Y. CD 1/24, under LB.

▲ **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y. CA **$10,764,581.** constr. Fort Pitt Tunnel to carry Penn-Lincoln Parkway under Mt. Washington in Pittsburgh, PENNSYLVANIA. State Hy. Dpt., 506 N. Office Bldg., Harrisburg, Pa. CD 3/5, under LB.

▲† **Diamond Constr. Co.**, P.O. Box 647, Savannah, Ga. CA **$5,528,594.** land reclamation, Farragut Fill and Dewey-Santee Fill, U. S. Naval Academy, NBy 2548, ANNAPOLIS, MD. Officer in Charge of Constr., U. S. Naval Academy, Annapolis, Md. CD 2/26, under LB.

BUILDINGS—LB & CA

▲ **Atlantic Beach Estates**, c/o Trylon Realty Co., 98-89 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$1,600,000.** 40 HOUSES on 14 acre tract on Reynolds Channel, ATLANTIC BEACH, N. Y.

Thomas C. Brown Co., Union St., Schenectady, N. Y. CA **$992,900.** Central High SCHOOL, HAMILTON, N. Y. Hamilton Central School Dist., Hamilton, N. Y. CD 2/6, under LB.

▲ **Kenwyn Corp.**, 5724 Keystone St., Phila., Pa. Separate Contracts. **$3,000,000.** RESIDENTIAL DEVELOPMENT, 317 units, Clements Bridge Rd., BARRINGTON, N. J.

▲ **C. B. Hembling & Sons**, 107 Monmouth Ave., Red Bank, N. J. CA **$1,389,719.** general constr. HIGH SCHOOL, WEST ORANGE, N. J. Bd. Educ., West Orange, N. J. Awarded Mar. 11. CD 5/21.

▲ **Hope Homes, Inc.**, 29A Sayrewood Shopping Center, Hy. 29, Parlin, N. J. Owner Builds. **$12,000,000.** 1,700 HOMES on Rtes. 9 and 18, Madison Twp., PARLIN, N. J. Harold Glucksman, 850 Broad St., Newark, N. J., archt.

▲ **Saul Cantor**, Rte. 29, Parkin, N. J. Owner Builds. **$3,000,000.** SHOPPING CENTER, WEST CALDWELL, N. J. Harold Glucksman, 850 Broad St., Newark, N. J., archt.

Baltimore Contractors, Inc., 711 S. Central Ave., Baltimore 2, Md. LB **$997,400.** (10 bidders) brick, concrete, steel, block Arundel Elementary SCHOOL, Round Rd. and Veronica Ave., BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Mar. 13. CD 2/28.

▲† **Herbert L. Bright Co.**, 427 "O" St. S.W., Wash., D. C. LB **$1,138,000.** 70 HOUSING units (Capehart), FORT RITCHIE, MD. U. S. Eng., First and Douglas Sts. N.W., Wash., D. C. Bids Feb. 28. CD 2/21, under LB, Commercial Buildings.

Community Builders, Inc., 8605 Cameron St., Silver Spring, Md. CA **$800,000.** 92 one story, 26x37 ft., brick RESIDENCES, WHEATON, MD. Carlin Corp., Denton Corp., Edson Corp. and Fairlano Corp., c/o contractor.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 5 Kentucky

STREETS AND ROADS

April 5 Kentucky

▲ **Ala., Birmingham**—BA 4/4—City, City Hall addnl. 2,450 ft. runway exten., Municipal Airport, $1,017,965. CD 5/9.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH CAROLINA**—State Hy. Dpt., Columbia, **Suber & Co., Inc.**, Whitmire, S. C., CA **$1,077,341** b. conc. surf., concrete curb and gutter, concrete sidewalk 5.238 mi. U. S. Rte. 176, SC. Docket 42.434.1 F.A. Proj. U 2604 (3), UG 2604 (4), IN-312-1 (1), F-2604 (1) and US 986 (1), Spartanburg Co. Bids Feb. 19. CD 2/27, under LB.

▲† **Robert L. Lee Co.**, Manning, S. C., CA **$1,761,622.** primary runway extens., lighting and appurtenances, Charleston Air Force Base, No. 38-081-57-22, CHARLESTON, S. C. U. S. Eng., 31 Customhouse, Charleston, S. C. Bids Feb. 25. CD 3/5, under LB.

▲ **TENNESSEE**—State Hy. Dpt., Nashville, Bids opened 3/4.

Tenn.—**McDowell & McDowell**, 718 Murfreesboro Rd., Nashville, Tenn., LB **$987,041,** crushed stone, bit. paving, 1 concrete box type bridge, 1 concrete, steel bridge for interchange with State Rt. 7 on section 1.791 mi. Interstate Rte. 504, Proj. IN-504 (2) Giles Co.; LB **$1,461,212.** crushed stone, bit. surf., 4 bridges 7.893 mi. State Rte. 29, Proj. F-031-1 (5) Scott Co.; LB **$856,623,** surf. with crushed stone, bit. on section State Rte. 40, 5.699 mi. Proj. F. 040-1 (1), Polk Co.; LB **$153,553.** crushed stone surf. 3.113 mi. 2 concrete box type bridges on section of Sec. Route 2528, S-2528 (1), Washington Co.;

Tenn.—**Farrar Constr. Co.**, McMinnville, Tenn., LB **$260,375,** paving with crushed stone and bit. materials, concrete sidewalks, curbs, parking lanes 1.102 mi. section of State Rte. 2, SMP-240-A, Marion Co.;

Tenn.—R. L. Eatherly Constr. Co., 1000 Lebanon Rd., Nashville, Tenn., LB **$79,296.** crushed stone surf. 1 concrete box type bridge 3.164 mi. on section of Sec. Route 6149, S-6149-(1) Dickson Co.;

Tenn.—**J. A. Hadley Constr. Co.**, Humboldt, Tenn., LB **$557,000.** widn., bit. resurf. 9.607 mi. State Rte. No. 5, SP 2000-A, Gibson Co.;

Tenn.—**Southern States Paving Co.**, 900 44 Ave. N., Nashville, Tenn., LB **$550,305.** wid'n., bit. materials resurf. 11.9 mi. section of State Rte. 6, SP-1193-B, Maury Co.;

Tenn.—**Gilchrist & Son**, Decatur, Ala., LB **$251,330,** crushed stone surf. 3 concrete box type bridges 5.586 mi. section Sec. Rte. 2450, S-2450 (1), Scott Co.;

Tenn.—**G. & Z. Constr. Co.**, 1083 N. Hollywood St., Memphis, Tenn., LB **$140,002.** gravel or chert surf. 3 bridges 6.325 mi. on section of Sec. Rte. 8112, S-8112 (3) Tipton Co.;

Tenn.—**Summers-Taylor Paving Co.**, Elizabethton, Tenn., LB **$408,367.** crushed stone and bit. material paving concrete sidewalk curb, gutters and storm sewerage sys. 0.992 mi. section of relocated State Rte. No. 34, SMP 239-A, Washington Co.;

Tenn.—**Lonas-Cleveland Co.**, Cleveland, Tenn., LB **$151,721** crushed stone surf. 6.68 mi. Sec. Rte. 4317, S-4317 (2) Bradley Co.;

Tenn.—**Pat H. Eatherly Constr. Co.**, Carthage, Tenn., LB **$74,285.** crushed stone surf. 1 concrete deck girder bridge 1.474 mi. section of Sec. Route 6190, S-6190 (2), Cannon Co.;

Tenn.—**Burton Constr. Co.**, Winchester, Tenn., LB **$660,886** crushed stone and bit. materials surf. 2 concrete deck girder bridges, 5.04 mi. section of State Rt. 1, F-001-6 (11) Pt. II Cumberland Co.;

Tenn.—**Marion Constr. Co.**, 450 Craighead St., Nashville, Tenn., LB **$192,497,** crushed stone and bit. materials surf. 3 concrete deck girder bridges on 3 section 1.291 mi. relocated State Rte. 28 Proj. F-02801 (12) Pt II, Cumberland Co. CD 3/6.

BUILDINGS—LB & CA

▲ **Merando, Inc.**, 4098 Minnesota Ave. N. E., Wash., D. C., LB **$1,208,614.** Kenmore JUNIOR HIGH SCHOOL addn., ARLINGTON, VA. Bd. Educ., 1426 Quincy St., Arlington, Va. CD 12/1/55.

▲† **Florida Builders, Inc., J. C. Shelton and J. J. T. Hawsworth**, 900 43 St. S., St. Petersburgh, Fla., CA **$6,296,950.** 480-units of Capehart HOUSING, Army Aviation Center, FORT RUCKER, ALA. U. S. Eng., 2301 Grant St., Mobile 7, Ala. Bids Jan. 29. CD 1/31, under LB, Commercial Buildings.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 3 Michigan

STREETS AND ROADS

April 2 Ohio **April 3 Michigan**

April 9 Wisconsin

▲ **ILLINOIS**—BA 4/11—Illinois State Toll Hy. Comn., 20 N. Wacker Rr., Chicago,

Contract E-1A, grading, drainage, paving, appurtenances, erecting precast concrete, steel bridges 3.67 mi. beginning W. of Deerpath Rd. exten. easterly to point W of Rt. 31, Kane Co. $2,500,000. Vogt, Ivers, Seaman & Assocs., 20 N. Wacker Dr., Chicago, Ill., sect. engrs. CD 5/11.

▲ **O., Cleveland**—BA 4/18—City, Dpt. P. Services, Louis L. Drasler, dir., City Hall, Zone 14, Ridge Rd. Incinerator. $1,500,000. Plans deposit $100. Adache Eng. Co., Old Arcade, Zone 14, engrs. CD 4/16.

BUILDINGS—BA

▲ **Ind., Evansville**—SCHOOL—BA 4/8—School City of Evansville, School Office, 200 N.W. 7 St., irregular 200x360 ft., masonry, steel, concrete Reitz High School addn. $1,200,000. Plans deposit $25. Ralph Legeman Associates, 10 Chestnut St., archts. CD 12/20/43.

▲ **O., Cincinnati**—PARKING GARAGE—BA 4/9—City, City Hall, parking garage, Sixth and Elm Sts. $1,400,000. Plans deposit $22.50. CD 7/20/55.

▲ **Mich., Wyandotte**—SCHOOL—BA 4/10—Taylor Twp., School Dist., Ray J. Pilon, secy., 24715 Wick Rd., Junior High School, Westlake and Wick Rd., Taylor. $1,250,000. Plans deposit $25, refundable. Robert J. West, 1214 United Artists Bldg., Detroit, Zone 26, archt.

▲ **Ill., Chicago**—SCHOOL—BA 4/15—Bd. Educ., 228 N. La Salle St., 2 story, brick John Marshall Harlan High School, 98 and Michigan Ave. $3,000,000. CD 8/18/55.

▲ **O., Cincinnati**—MEDICAL COLLEGE—BA 4/13—University of Cincinnati, Burnet Woods Park, existing bldg. alterations, Medical College addn. $1,500,000. Plans deposit $60.

▲ **O., Cincinnati**—HOUSING—BA About 6/10—Cincinnati Metropolitan Housing Auth., 595 Armory St., 375-unit, 89 buildings, public housing project on Winton Rd. $4,000,000. CD 3/7.

BUILDINGS—SLC

Ind., Indianapolis—OFFICE—Allstate Insurance Co., 7447 Skokie Blvd., Skokie, Ill., soon lets contract 1 story 149x298 ft., rein.-con. office bldg. $951,569. Everett I. Brown Co., 901 Illinois Bldg., archt.-engr. CD 9/13.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago, Bids opened 3/14.

ISTHC—**S. J. Groves & Sons Co.**, 1104 W. Reynolds St., Springfield, Ill., LB **$4,533,324.** Contr. E-1-C, grading, drainage, paving appurtenances, precast concrete and steel bridges, 5.27 mi. E. of Rt. 25 extending easterly W. of Rt. 59, Kane and DuPage Counties;

ISTHC—**Contracting & Material Co.**, 1235 Dodge St., Evanston, Ill., **Kenny Constr. Co.**, 3200 Oakton St., Skokie, Ill. and **Louis Garavaglia**, 24240 Mound St., Centerline, Mich., LB **$5,980,899** Cont. T-9-A, grading, drainage, paving, appurtenances, precast concrete, steel bridges 2.29 mi. beginning S. of Touhy Ave. extending N. of Busse Hy., Cook Co. CD 2/25.

▲ **Lock Joint Pipe Co.**, 150 Rutledge Ave., East Orange, N. J., LB **$813,555** (4 bidders) concrete pipe sewage effluent drainage project, MADISON, WIS. Madison Metropolitan Sewerage Dist. 104 N. 1 St., Madison, Wis. Bids Mar. 5. CD 2/6.
N. Kalscheur, Inc., Sauk City, Wis., LB **$203,962** (12 bidders) ditch construction (Madison, Wis.).

▲ **Louis Garavaglia**, 24240 Mound Rd., Center Line, Mich. LB **$2,239,800.** constr. and sinking caisson for raw water booster pumping stations at Water Works Park Station, DETROIT, MICH. Bd. Water Comrs., Water Bd. Bldg., 735 Randolph St., Detroit 25, Mich. Bids Feb. 26. CD 1/18.

BUILDINGS—LB & CA

▲ **Leo Schmidt**, 9920 Granger Rd., Cleveland 25, O., CA **$1,235,350.** West Park JUNIOR HIGH SCHOOL, CLEVELAND, O. Cleveland Bd. Educ., 1380 E. 6 St., Cleveland 14, O. Bids Mar. 8, awarded Mar. 15. CD 3/14, under LB.

▲ **R. A. Gall Realty Co.**, 4815 Pearl Rd., Cleveland 13, O., Own Forces, **$1,064,500.** 46 HOMES, Sunset Oval off Columbia Rd. south of Butternut Ridge Rd., NORTH OLMSTED, O.

▲ **R. A. Gall Realty Co.**, 4815 Pearl Rd., Cleveland 13, O., Own Forces, **$3,510,000.** 156 HOMES, 70-acre site at southwest corner of Routes 42 and 82, **$787,500.** 35 HOMES, Willow Lane off Prospect Rd., STRONGSVILLE, O.

▲ **R. A. Gall Realty Co.**, 4815 Pearl Rd., Cleveland, 13, O., Own Forces, **$1,228,500.** 54 HOMES, Dover Rd. between Lorain and Center Ridge Rds., WESTLAKE, O.

▲ **Fred Berglund & Son, Inc.**, 8410 S. Chicago Ave., Chicago, Ill., CA **$1,000,000.** food container PLANT addn., WANATAH, IND. Kaiser Aluminum & Chemical Corp., U. S. 30 and 421, Wanatah, Ind. CD 2/4.

▲ **Robin Constr. Co.**, 1333 N. Wells St., Chicago, Ill., CA **$3,000,000.** four 256-unit APARTMENT, 2011-25-35-49 W. Granville Ave., CHICAGO, ILL. Granville Garden Apartments, c/o Al Robbins, 1333 N. Wells St., Chicago, Ill. CD 12/31/56.

▲ **Turner Constr. Co.**, 105 W. Adams St., Chicago, Ill., CA **$3,500,000.** 5 story, brick PLANT ADMINISTRATION OFFICE, 1 and 3 story STAFF OFFICE BLDG., 5401 Harrison St., SKOKIE, ILL. International Minerals & Chemical Corp., 20 N. Wacker Dr., Chicago, Ill. CD 10/24/56, under Ill., Chicago.

▲ **Hoffman Co., Inc.**, 1510 N. Oneida St., Appleton, Wis., CA **$1,184,500** (5 bidders) general contract HOSPITAL addn., alterations, APPLETON, WIS. Outagamie Co., Court House, Appleton, Wis. Bids Mar. 7. CD 2/20.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 2 Iowa

STREETS AND ROADS

April 2 Iowa

▲ **Minn., Edina**—BA 4/12—Village, Gretchen S. Alden, clk., Sanitary Sewer No. C, from northwest corner of village southeasterly along Nine Mile Creek, about 28,000 lin. ft. 12- to 24-in. sewers, lift station, $1,300,000. J. Zikan, village engr. Bids 3/14 rejected. CD 3/1.

BUILDINGS—BA

▲ **Tex., Mesquite**—SHOPPING CENTER—BA 4/8—Big Town., c/o Tatum & Quade, archts., 2812 Fairmount St., Dallas, shopping center, $14,000,000. Plans deposit $50. CD 8/21.

▲† **Tex., Victoria**—HOUSING—BA 4/11—U. S. Govt., c/o Purchasing & Contracting Office, Foster Air Force Base, Victoria, constr. and finance 500-family Capehart housing units, Foster Air Force Base, (VIII Housing Act) Inv. 41-656-57-60. $5,750,000. CD 3/7, under Commercial Bldgs.

▲† **Tex., El Paso**—HOUSING—BA 4/24—U. S. Eng., Box 1538, Albuquerque, N. M., 490-unit frame masonry Capehart Housing, ENG-29-005-57-7, Fort Bliss, $5,000,000-$10,000,000. CD 1/24.

▲ **Tex., Houston**—SCHOOL—BA 5/9—Houston Independent School Dist., 1300 Capitol St., Briargrove Elementary School, $1,100,000. Cameron Fairchild & Assocs., 2626 W. Dallas St., archts. CD 3/19.

BUILDINGS—SLC

▲ **Neb., Lincoln**—BANK, etc.—Continental National Bank, 1100 "O" St., soon lets contract bank and office with parking area, $1,000,000. Davis & Wilson, 225 Stuart Bldg., archts. CD 4/14/55.

HEAVY CONSTRUCTION—LB & CA

Orfei & Mariani, 1156 Homer St., St. Paul, Minn. LB **$965,000**. sanitary sewers, Lateral Sewer imprv. No. 4, Sec. A, 74,000 lin. ft. 8- to 12-in. sewers, Sec. B, 24,000 lin. ft. 8- to 12-in. sewers, GOLDEN VALLEY (P. O. MINNEAPOLIS), MINN. Village, R. W. Owens, clk. and administrator, Golden Valley, Minn. Bids Mar. 15. CD 3/1.

▲† **F. W. Forst**, WOW Bldg., Omaha, Neb., LB **$258,377** Sch. A; LB **249,228** Sch. B, levees and channel alterations, Unit I, Section 11C, Little Sioux River, near Onowa, Inv. 25-066-57-66, IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 14. CD 2/4;
Art Schimkat & H. G. Selley Corp., De Smet, S. D., LB **$283,473** Sch. C; LB **$1,257,499** Sch. F, entire project (Iowa);
Cartwell & Ferris, Onowa, Iowa, LB **$143,049** Sch. D (Iowa);
S. W. Hartwick, Beardstown, Ill., LB **$228,443** Sch. E (Iowa).

▲ **IOWA**—State Hy. Comn., Ames,
Iowa—**Fred Carlson Co.**, Decorah, Iowa, CA **$592,240**. c. conc. 9.568 mi. F-1049 (2), Black Hawk and Buchanan Counties;
Iowa—**H. F. Schoreder & Sons**, Carroll, Iowa and **Iran Van Buskirk & Sons**, Hawarden, Iowa, CA **$2,207,077**. grading 14.019 mi. I-902 (4) Harrison and Pottawattamie Counties. Bids Mar. 5. CD 3/12, under LB.

▲† **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Iowa, CA **$11,697,161**. airfield paving, Inv. 25-066-47-49, GRAND Forks Air Force Base, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 13. CD 3/19, under LB.

▲† **J. A. Bass Co.**, 332 Sexton Bldg., Minneapolis, Minn. CA **$1,722,400**. Schedule 1, shops and warehouses at Minot Air Force Base, ENG-25-066-57-35, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. CD 2/19, under LB.

▲ **TEXAS**—State Hy. Cmn., Austin,
Austin Bridge & Worth Constr. Co., P. O. Box 1590, Dallas 1, Tex., CA **$1,670,626**. c. conc. and hot mix b. conc. 1.317 mi. Hy. U.S. 81 Proj. I-264 (11), Bexar Co. Bids Jan. 23. CD 1/28, under LB.

▲ **Wade Lahar Constr. Co.**, 5560 E. 56th Ave., Denver, Colo. CA **$2,322,469**, (Phase 2) utilities for Air Force Academy, IFB 05-613-57-19, COLORADO SPRINGS, COLO. Dpt. Air Force, Box 1670, Colorado Springs, Colo. CD 3/11, under LB.

BUILDINGS—LB & CA

▲ **Robert Paulus Constr. Co.**, 3441 Morganford Rd., St. Louis 16, Mo. CA **$878,547**. general constr. 3 story, brick, steel, concrete masonry SENIOR HIGH SCHOOL, St. Charles Rock Rd. and Lucas and Hunt Rd., NORMANDY (ST. LOUIS 21 P. O.), MO. Normandy School Dist. Bd. Educ., Ward E. Barnes, supt. Schools, 7237 Natural Bridge Rd., Normandy 21, Mo. Bids Mar. 12. CD 2/20.
Peters-Eichler Heating Co., 8047 Litzenger Rd., Brentwood 17, Mo. CA **$341,841**. heating and ventilating work (Normandy, Mo.).

Kingery Constr. Co., 1941 Y St., Lincoln, Neb. LB **$997,895**. general constr. Chas. G. Dawes JUNIOR HIGH SCHOOL, LINCOLN, NEB. Bd. Educ., 720 S. 22 St., Lincoln, Neb. Bids Feb. 28. CD 1/9.

▲ **Procon, Inc.**, Des Plaines, Ill. CA Est. **$2,000,000**. petrochemical PLANT with Udex extraction unit, POTWIN, KAN. Vickers Petroleum Co., 8506 E. Central St., Wichita, Kan. Universal Oil Products Co., Des Plaines, Ill. engr. CD 12/4 52.

▲ **Fegles Constr. Co.**, 711 Westley Temple Bldg., Minneapolis, Minn., CA **$1,369,000**. STORAGE SILOS, ADA, OKLA. Ideal Cement Co., Denver Natl. Bank Bldg., Denver 2, Colo. Bids Feb. 25. CD 2/21.

▲ **Harmon Constr. Co.**, 100 S. Indiana St., Oklahoma City, Okla., CA **$1,849,900**. 6 story HILLCREST HOSPITAL addn., TULSA, OKLA. Hillcrest Medical center, 1653 E. 12 St., Tulsa, Okla. Bids Feb. 6, awarded Mar. 5. CD 2/13, under LB.

▲ **E. P. Roberts**, 2831 S. Florence St., Tulsa, Okla., CA Est. **$1,500,000**. 5 story OFFICE, S. Boulder St., TULSA, OKLA. Healing Waters, Inc., 1648 S. Boulder St., Tulsa, Okla. Cecil Stanford, 2831 S. Florence St., Tulsa, Okla., archt. Awarded Feb. 28.

▲ **F. Avanzini & Croes Bldg. Co.**, 114 Norview St., Houston, Tex., Owner Builds. **$21,000-$25,000** each 50 DWELLINGS, constr. mid 1957; **$18,000-$20,000** each, 50 DWELLINGS, constr. 1st ½ of 1957, SPRING BRANCH, TEX. CD 3/4.

▲ **Long Constr. Co.**, Box 8186, University Park Station, Denver, Colo., CA **$1,040,000**, est $850,000 2 story, full bsmnt., 26,000 sq. ft. OFFICE building, 13th and Colfax Ave., DENVER, COLO. Professional and Business Men's Life Insurance Co., **Tabor Bldg.**, Denver, Colo. Bids Feb. 21. CD 3/1, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 17 California

STREETS AND ROADS

April 9 Idaho April 18, 19 California

▲† **California**—BA 4/18—U. S. Eng., 1209 8th St., Sacramento, 7 mi. new levee on North bank of American River from N. Sacramento Freeway to Carmichael Bluffs and two pumping plants, CIVENG-04-167-57-96. $2,000,000.

▲† **California**—BA 5/15—U. S. Eng., 1209 8th St., Sacramento, constr. main dam, bldgs. and appurtenances for Success Dam, Tule River, earth and rockfill dam and earthfill dike, dam 140 ft. high, 3,500 ft. long at crest, 1,340,000 cu. yd. unclassified excav., 6,050,000 cu. yd. excav. from borrow, 1,097,000 cu. yd. impervious compacted fill, 3,856,000 cu. yd. pervious compacted fill, CIVENG-04-167-57-83. $8,000,000-$10,000,000. CD 4/21/44.

BUILDINGS—BA

▲ **Calif., Millbrae**—SCHOOL—BA 4/9—San Mateo Union High School Dist., c/o Secy., San Mateo, rein.-con. frame, structural steel Mills High School, incl. 62 classrooms, $3,900,000. Plans deposit $40. John Lyon Reid & Partners, 1069 Market St., San Francisco, Calif., archts. CD 10/17.

▲ **Calif., Redding**—SCHOOL—BA 4/9—Shasta Union High & Junior College Dist., c/o Supt., Redding, high school addns. at Enterprise High School and Central Valley High School. $1,000,000. Charles F. Dean, 1521 S St., Sacramento, archt. CD 11/20.

HEAVY CONSTRUCTION—LB & CA

▲† **Wells Stewart Constr. Co., Inc.**, 2133 Industrial Rd., Las Vegas, Nev., CA **$1,192,821**. Meadow Valley Wash Basin, constr. Mathews Canyon Dam and Pine Canyon Dam, CIVENG-04-353-57-28, NEVADA, U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 20. CD 2/27, under LB.

▲ **WASHINGTON**—State Hy. Comn., Olympia,
Wash.—**G. J. Norris**, 206 W. 73 St., Seattle, Wash. CA **$273,717**. (6 bidders) surf. cement-treated base, b. conc. paving, installing illumination sys. 1.13 mi. Primary State Hys. 12 and 1, FAP U-004-2 (10) Cowlitz Co.;
Wash.—**D. M. Drake Co.**, 1601 N.W. Savier St., Portland, Ore. CA **$945,228**. (9 bidders) clearing, draining, grading, 4 rein.-con. slab bridges, rein.-con. pedestrian bridge 2,049 mi. Primary State Hy. 2, FAP I-002-6 (24) Unit I, Spokane Co.;
Wash.—**Scarsella Bros.**, 2207 S. 146 St., Seattle, Wash. CA **$339,320**. (8 bidders) cleaning, draining, grading, rein.-con. bridge 1,477 mi. Primary State Hy. 1, FAP I-001-2 (30) Thurston Co. Bids Mar. 12, awarded Mar. 14. Grand total $1,558,266. CD 2/27.

WASHINGTON—State Hy. Comn., Olympia,
General Constr. Co., 3840 Iowa St., Seattle, Wash. CA **$822,195**. (2 bidders) reconstr. east approach to City waterway bridge at Tacoma, 0.191 mi. Sec. State Hy. IV, FAP US-0236 (1) Unit 1, Pierce Co. Bids Mar. 12, awarded Mar. 14. CD 2/20.

▲† **Hall-Atwater, Inc.**, Box 3023, International Sta., Seattle, Wash. and **O. A. White Constr. Co.**, Walla Walla, Wash., LB **$2,893,000**. (5 bidders) aircraft control and warning facilities, Spec. 6631/56, KLAMATH FALLS, ORE. P. Wks. Officer, Thirteenth Naval Dist., Naval Station, Seattle, Wash. Bids Mar. 19. CD 2/27.

▲ **Lord Brothers**, 9233 N. Calvert Ave., Portland, Ore., CA **$3,336,747**. 100,000 lin. ft. 42- to 54-in water lines, SALEM, ORE. City, City Hall, Salem, Ore. Bids Feb. 21. CD 2/27, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,
Gibbons & Reed Co., 825 W. 9th North St., Salt Lake City, Utah, CA **$4,976,184**. grading, paving 5.4 mi. 4 lane freeway on new and existing alinment on US 40 between 0.5 mi. east of Floriston and Nevada State Line and constr. undercrossing at Farad, Nevada and Sierra Counties. Bids Mar. 6, awarded Mar. 15. CD 3/18, under LB.

▲ **CALIFRONIA**—State Dpt. P. Wks., 1120 N. St., Sacramento,
Ukropina-Polich & Kral, P. O. Box 105, San Gabriel, Calif., CA **$1,030,381**. constr. 1.4 mi. Long Beach Freeway between 0.1 mi. south of Atlantic Ave. and 0.1 mi. north of Rosecrans Ave., and constr. rein.-con. pump house and retaining walls, Los Angeles Co. Bids Mar. 7, awarded Mar. 15. CD 3/14, under LB.

▲ **A. Teichert & Son, Inc.**, 15534 E. Cypress St., Baldwin Park, Calif., LB **$4,418,920**, est. $4,000,000. Los Angeles River imprvs., Owensmouth to Corbin Aves., CIVENG-04-353-57-30, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 19. CD 2/25.

† **Harold C. Geyer**, P. O. Box 1190, Monterey, Calif., LB **$948,404**. (5 bidders) 4 rein.-con. masonry, 24,150 sq. ft. BLDGS., incl. post chapel with educational facilities, 10,000 sq. ft. regimental chapel, 13,000 sq. ft. theater, 4,000 sq. ft. branch post exchange, ENG-04-203-57-123, FORT ORD, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Mar. 14.

▲† **M & K Corp. and Stolte Inc.**, 519 California St., San Francisco, Calif., CA **$5,428,000**. sewage disposal facilities, Naval Ammunition Depot, Mare Island Shipyard, NBy 91703, Spec. 50115, VALLEJO, CALIF. Dist. P. Wks. Office, Dpt. Navy, Twelfth Naval Dist., San Bruno, Calif. Bids Jan. 16. (Correction—contractor). CD 2/25, under CA.

BUILDINGS—LB & CA

▲ **Classic Homes, Inc.**, 8845 W. Olympic Blvd., Beverly Hills, Calif. Owner Builds. **$2,110,200**. 1 and 2 story, 140 frame, stucco, wood siding, brick veneer DWELLINGS, GRANADA HILLS (Br. San Fernando) CALIF.

▲† **McDonald Bros.**, 2634 So. LaCienega Blvd., Los Angeles, Calif., CA **$3,378,360**. concrete block, masonry steel MANUFACTURING BLDG. and ADMINISTRATION BLDG., NIMBUS, CALIF. Aerojet General Corp., 410 Citrus Ave., Covina, Calif. CD 1/2, under LB.

▲ **George Roek, Contractor**, P. O. Box 783, Stockton, Calif., CA **$1,036,675**, est. $949,850; LINCOLN HIGH SCHOOL, STOCKTON, CALIF. Lincoln Unified School Dist., c/o Supt., 818 Lincoln Rd., Stockton, Calif. Bids Dec. 28. CD 1/9, under LB.

Don Jaran Constr. Co., Inc., 8660 Wilshire Blvd., Beverly Hills, Calif. Owner Builds. **$922,400**. 2,000 sq. ft., 46 frame, stucco DWELLINGS, Tract 22339, WOODLAND HILLS, CALIF. Charles E. DuBois, 5143 Sunset Blvd., Los Angeles, Calif., archt.

McDaniel & Burroughs, P. O. Box 1631, Marysville, Calif., CA **$931,990**. HIGH SCHOOL addn., YUBA CITY, CALIF. Yuba City Union High School Dist., c/o Supt., Yuba City, Calif. Bids Jan. 16. CD 1/25, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

April 3 Ontario

STREETS AND ROADS

April 9 Prince Edward Island

Que., Montreal—PILE FOUNDATIONS—BA 4/4—National Harbors Bd., West Block, Parliament Bldgs., Ottawa, Ont., pile foundations for Elevator No. B1, Montreal Harbor. Over $900,000. C. D. Howe Co., Ltd., 1421 Atwater Ave., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **Standard Gravel & Surfacing Co. Ltd.**, 5340 1 St. S.W., Calgary, Alta., CA **$2,020,760**. 1957 street surfacing program, CALGARY, ALTA. City, Civic Block, Calgary, Alta. Awarded Mar. 5. CD 3/14/51.

▲ **Narod Constr. Co. and Dawson & Hall Ltd.**, c/o 775 Clark Dr., Vancouver, B. C. CA **$2,994,137**. Contract No. 4, 6 tunnel elements in connection with Deas Island Tunnel near Ladner, BRITISH COLUMBIA. B. C. Govt. Parliament Bldgs., Victoria, B. C. Bids Feb. 18, awarded Mar. 6. CD 3/4, under LB.

▲ **Peter Kiewit Sons Co. of Canada Ltd., Raymond International Ltd., B. C. Bridge & Dredging**, c/o 1500 W. Georgia St., Vancouver, B. C. CA **$5,304,280**. Contract No. 3, Deas Island Tunnel covering constr. of Lulu Island and Deas Island approaches, ventilation bldgs. and fitting-out jetty near Lander, BRITISH COLUMBIA. B. C. Govt., Parliament Bldgs., Victoria, B. C. Awarded Mar. 5.

▲ **Vancouver Pile Driving & Contg. Co. Ltd.**, South Foot of St. Andrews St., North Vancouver, B.C. CA **$1,950,795**. timber crib dam and earth and concrete-lined canal, incl. appurtenant work on Salmon River, Vancouver Island, BRITISH COLUMBIA, B. C. Power Comn., Box 500, Victoria, B. C. Bids Feb. 19, awarded Mar. 13. CD 3/20, under LB.

BUILDINGS—LB & CA

▲ **James Kemp Constr. Ltd.**, 121 Vansitmart St., Box 52, Postal Station "B", Hamilton, Ont. CA **$1,617,000**. 3 story, bsmnt., 173x364 ft. granite, limestone FEDERAL BLDG., Clarance St., KINGSTON, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Feb. 13, awarded Mar. 12. CD 2/20, under LB.

▲ **Alain Construction, Inc.**, 5 Church St., Dorval, Que., CA Est. **$1,900,000**. 125 unit HOUSING Program, Montee St. Charles, STE. GENEVIEVE DE PIERREFONDS, QUE. Hillcrest Garden, c/o contractor Emilien Bujold, 6746 Molson St., St. Genevieve de Pierrefonds, Que., archt. Awarded Mar. 8.

Smith Bros. & Wilson Ltd., 524 Second Ave. N., Saskatoon, Sask., CA **$964,777**, COLLEGIATE, 10.5 acre site, Nutana, SASKATOON, SASK. Saskatoon Collegiate School Bd., 11 St. S.E., Saskatoon, Sask. Douglas Michalenko & Wedgewood, 914 Broadway, Saskatoon, Sask., engrs. Awarded Mar. 11. CD 12/6.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲† **COSTA RICA**—Office of the Minister of P. Wks., Panama,
Inter-Americana de Estudios Y Empresa, SA, Panama City, Costa Rica. LB **$2,072,416**. Proj 17, grading, small drainage structures, selected materials sub-base, crushed stone base course 8 bridges, Concepcion to Costa Rica border for Dpt. Commerce, Bureau P. Rds., Inter-American Highway, 18 and F Sts. N.W., Wash., 25, D. C. Bids Feb. 15. CD 2/21.

BUILDINGS—LB & CA

▲ **Ingenieria Herman, C. A., Edficio Camuri, Oficina 43, Calle Real de Sabana Grande, Caracas, D. F.** Venezuela. LB **$2,895,277**. constr. 600-bed Caracas Maternity HOSPITAL, MARACAIBO, VENEZUELA. CD 7/13, under LB.

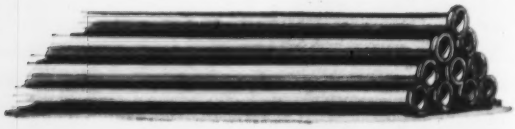
AMERICANS ABROAD

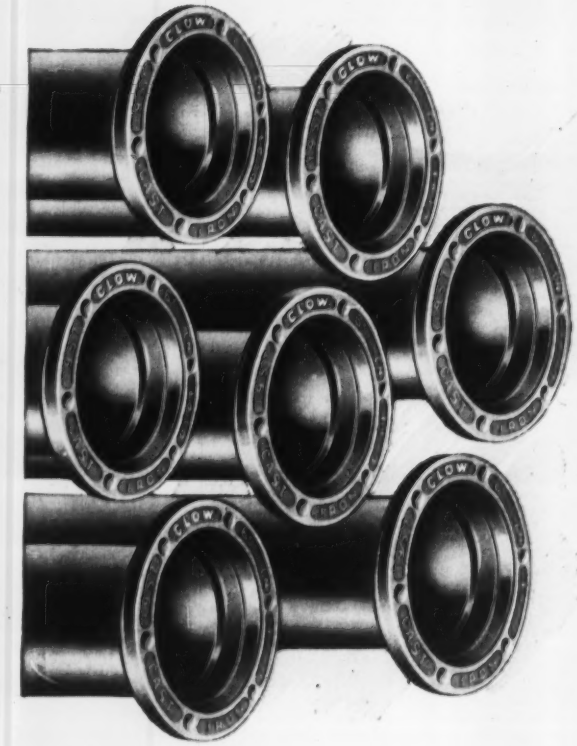
HEAVY CONSTRUCTION—LB & CA

▲† **Goyss-Owens-Farnsworth-Wright**, Madrid, Spain, LB **$2,300,495**, GEN-130, Strat. Com. facilities at San Pablo and Moron, Spanish Air Base Program, SPAIN. Bureau Yards & Docks, Dpt. Navy, 18 St. and Constitution Ave. N.W., Wash. 25, D. C., U.S.A.
Fomento, Madrid, Spain, LB **$3,770,045**. TOR-53, airfield paving at Torrejon, (Spain).

(Proposal Advertisement see pp. 117 to 119)

take advantage of the plus factors when you specify UNDERGROUND WATER PIPE





Experienced men who specify and install underground water pipe take advantage of the plus factors when they specify cast iron pipe.

Take the pressure plus factor. Minimum wall thickness Clow cast iron pipe (ASA A21.6 Class 22) is rated for at least 250 psi working pressure in diameters 10″ and smaller.

What does this mean? It means that cast iron pipe is rated safely above the minimum pressure requirements for municipal water service, and can be specified to the full ASA rated working pressure. This is because of the inherent strength of cast iron pipe . . . beam strength . . . compressive strength . . . bursting strength . . . all scientifically calculated with ample factor of safety on the basis of sound engineering practice and the result of actual service records.

To get the best advantage of the plus factors for your system, invite a Clow man in to discuss your requirements when pipe first enters your plans.

JAMES B. CLOW & SONS, Inc.

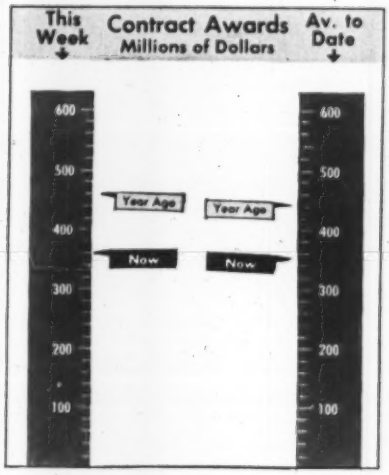
201-299 N. Talman Avenue • Chicago 80, Illinois

Subsidiaries: Eddy Valve Company, Waterford, New York • Iowa Valve Company, Oskaloosa, Iowa

SINCE 1878

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 13 wks 1957 millions	Chge %
Federal	$84.2	$710.6	+19
State and Municipal	141.3	1,709.3	+12
Total Public	225.5	2,419.9	+20
Total Private	133.5	2,147.4	−13
U. S. Total	$359.0	$4,567.3	−21
By Type of Work			
Waterworks	$8.6	$87.4	+20
Sewerage	15.8	104.2	−40
Bridges	10.7	170.8	+17
Highways	65.8	700.8	+28
Earthwork, Waterways	8.5	313.1	+75
Buildings:			
Public, Excl. Housg.	39.3	537.3	+10
Public Housing	42.1	179.5	+74
Private Housing	78.6	723.6	−56
Commercial	21.4	407.9	−26
Industrial	30.1	854.2	−37
Unclassified	38.1	488.5	+1
U. S. Total	$359.0	$4,567.3	−21

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

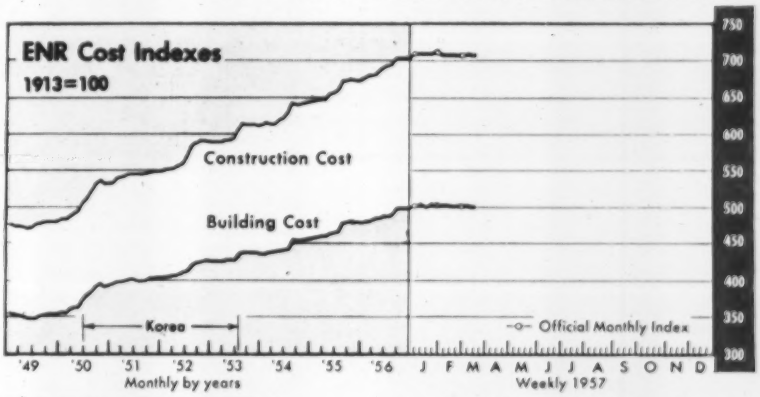
NEW CAPITAL FOR CONSTRUCTION

	Week of Mar. 21	Cum. 12 wks 1957 millions	Chge '56-'57 %
Corporate Securities	$181.8	$1,504.2	+145
State and Municipal:			
All Except Housing	114.5	1,275.2	+12
Housing	...	41.5	+104
Federal Loans	11.3	32.6	+44
Federal Aid	...	...	...
Total Nonfederal	$307.7	$2,853.5	+59
Federal Appropriations:			
In U. S.	...	...	−100
Outside U. S.	...	...	...
Total New Capital	$307.7	$2,853.5	+56

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of Mar. 21 1957	% Change from Feb. 21 1957	% Change from Mar. 22 1956
Construction Cost	709.01	+0.05	+3.9
Building Cost	500.88	−0.1	+3.4

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.040; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	Feb. 28 1957 (millions)	Percent Change from last Month	Year
Total U. S. (ENR reported)	$105,690	+0.3	+9.5
By Ownership—			
Private	44,507	+0.4	+9.6
State & Municipal	47,709	+0.3	+10.6
Federal	13,474	−0.4	+5.6
By Type of Work—			
Waterworks	2,242	−0.4	+10.1
Sewerage	3,252	+0.9	+8.8
Bridges	3,066	−0.4	+10.4
Highways	13,155	+0.3	+15.4
Earthwork, Waterways	11,334	−0.2	+0.5
Public Buildings, Including Public Housing	18,882	+0.4	+12.3
Industrial Buildings	16,132	−0.4	+5.8
Commercial Buildings, Incl. Private Housing	18,978	+1.3	+17.9
Unclassified, Private	9,397*	+0.1	+1.6
Unclassified, Public	9,252	+0.03	+7.6

* Includes private bridges, $88 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1957 Feb. (millions)	1957 2-months (millions)	Percent Change from last Month	Year Cum.
Total U. S. (ENR reported)	$1,539	$4,121	−40.4	−22.4
By Ownership—				
Private	878	2,203	−33.7	−8.2
State and Municipal	604	1,801	−49.5	−31.4
Federal	57	117	−3.3	−59.1
By Type of Work—				
Waterworks	22	64	−48.0	−22.9
Sewerage	43	116	−42.0	+102.4
Bridges	12	159	−91.7	+38.5
Highways	183	773	−69.0	+457.3
Earthwork, Waterways	43	57	+225.3	−66.8
Public Buildings, Incl. Public Housing	288	596	−6.5	−27.3
Industrial Buildings	294	712	−29.4	−39.7
Commercial: Mass Housing	181	707	−65.6	+33.9
Other Building	332	570	+38.9	+27.9
Unclassified, Private	71	214	−50.4	−13.3
Unclassified, Public	70	153	−14.9	−90.0

FLOW OF PROJECTS OUT OF BACKLOG INTO CONTRACTS

	1957 Feb. (millions)	1957 2-months (millions)	Percent Change from last Month	Year Cum.
Total U. S. (ENR reported)	$811	$1,642	−2.5	+15.1
By Ownership—				
Private	396	678	+40.6	−3.1
State and Municipal	323	745	−23.6	+44.4
Federal	92	219	−27.8	+3.5

Barber-Greene Finisher paving one of the many steep, hairpin turns in the Green Mountains of Vermont.

Hairpin turns with a mountain-climbing finisher

Here's a grueling test of superior traction; yet, the Barber-Greene Crawler-Mounted Finisher provides positive traction and steering even while pushing loaded trucks up steep grades on slippery primes or on soft bases. Short over-all length and crawler traction also assure superior maneuverability . . . save time when paving a mountain road or a downtown boulevard.

These and other unique design features combine to give Barber-Greene Finishers their world-wide reputation of outstanding performance.

Top paving speed and positive traction: The Barber-Greene will lay any mix as fast as any paving machine now in use, with the same surface quality. Widest choice of laying speeds lets the operator select the optimum speed for the job and the mix.

Ease of control . . . superior maneuverability: Operator has unrestricted view of truck dumping, material level in spreading screws and finished mat.

Time-saving hopper: Receiving hopper is amply wide for fast truck changes and easy discharge without spillage.

World-wide service and parts: Available from local stocks on short notice all over the free world.

Crawler traction provides easier maneuverability—saves time and space when turning around.

Write for literature on this pace-setting finisher.

56-27F

J. D. PITTMAN TRACTOR CO.
Birmingham, Decatur & Tuscaloosa, Ala.

BURFORD-TOOTHAKER TRACTOR CO.
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SQUARE DEAL MACHY. & SUPPLY CO.
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MERTS EQUIPMENT CO.
Albany and Savannah, Ga.

SEABROOK MACHINERY, INC.
Tallahassee, Florida

JEFF HUNT MACHINERY COMPANY
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YANCEY BROS. CO.
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WILSON-WEESNER-WILKINSON CO.
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BURTON FRANKLIN COMPANY
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AURORA, ILLINOIS, U.S.A.

Port Authority Ends Busy Year

Bi-state agency spends $84 million and commits $50 million for airports, tunnel, piers in N. Y., N. J.

Expenditures of $84.6 million in actual cash, and contract commitments totaling $50 million more were listed among its 1956 accomplishments by the Port of New York Authority (PNYA) last week.

Making public the bi-state agency's 1956 annual report, Donald V. Lowe, PNYA Chairman, said that capital expenditures of $146.6 million are budgeted for the current year. He added that money spent in 1956 brings total spending by the authority to $616.3 million, since its inception.

Major items of construction work in the 1956 program included progress on the $120 million "Terminal City" development at New York's Idlewild Airport, where a 10-year-old "temporary" administration building now is being replaced with a city of structures in the center of the 5,000 acre airfield; work on the now nearly completed $100 million Third Tube of the Lincoln Tunnel; work on about $85 million worth of piers in Brooklyn and $18 million worth in Hoboken; and miscellaneous work at Port Newark, Newark Airport and LaGuardia Airport.

Additionally, Mr. Lowe noted, work went forward on planning for the $500 million construction of a second deck on the George Washington Bridge across the Hudson River, and the long-planned suspension bridge across the Narrows separating upper and lower New York Bay. The bridge at the Narrows will be built by PNYA, then "bought" by the Triboro Bridge & Tunnel Authority, for operation.

• **Business good**—The six facilities now in use for vehicular traffic, meanwhile, turned in another record-breaking year, the report said.

Together, the Holland and Lincoln Tunnels, George Washington Bridge and three Staten Island bridges handled a total of 86.2 million vehicles, with gross revenues of $76.7 million—up 12% over the previous year. Net was $38.7 million.

• **Pier works**—Getting off to a fast start, after it took over a two-mile stretch of Brooklyn waterfront on March 1, 1956, PNYA has started the $85 million rehabilitation program that calls for replacement of 25 of the 26 piers in the area with 10 new structures; a new marine terminal; and new facilities for truck and vehicular service to the area.

First job to get under way was the $8 million Pier 11, a three-berth facility that will be New York's longest waterfront facility. Meanwhile, removal was started of old warehouses, homes and piers dating to the Civil War era.

In Hoboken, the agency has completed two new piers and completed rehabilitation of an existing double-deck cargo-passenger pier; in Port Newark, four major projects, involving a total of $18 million were under way.

Equipment Cutback

International Harvester will reduce production of its crawler tractors

International Harvester Co. will curtail its crawler tractor production and lay off some of its employees in that division, starting April 1, Peter V. Moulder, President, announced last week at the company's annual meeting.

Sales have been declining and inventories have been building up, Mr. Moulder told the stockholders.

"Our inventory of completed crawler tractors at the present time has grown beyond what we consider desirable limits," Mr. Moulder said. "We feel that we have gone as far as we should in building up inventory to help meet the contractors' needs. For that reason, effective April 1, we will considerably reduce the production schedules of these units, with a consequent reduction in employment in the plants of the Construction Equipment Division."

Mr. Moulder told stockholders that International Harvester construction equipment sales so far this year are running about 17% behind 1956 sales. But, he was not pessimistic about the future. He asserted that I-H hopes to boost construction equipment sales "as we get into the principal selling season."

No production cutbacks are planned by Caterpillar Tractor and Allis-Chalmers, two other major producers of crawler tractors.

A spokesman at Caterpillar Tractor Co. told ENR:

"Present inventories are adequate to meet the anticipated strong selling this

The Dalles Spillway Spills First Time

Waters of the Columbia River rushed over the spillway of The Dalles Dam for the first time Mar. 10, 4½ hours after the $260 million project's intake gates had been lowered.

Some 10,000 spectators watched as the 330,000 acre-ft pool began forming. Level of the pool was raised 60 ft to 130 ft above sea level, and by this week it was elevated by another 25 ft.

Television cameras relayed the event as the 24 intake gates, each weighing 70 tons, were lowered simultaneously.

The power and navigation project in southern Oregon is now 75% complete. First generation from the 1.1 million kw power plant is to go on the line next November.

spring, as indicated by steadily rising sales of construction equipment. We have no plans to change our production schedules."

Caterpillar reported that its January-February sales this year totaled $123.2 million, as against $103.3 million in 1956. Net profits for the same period also were up. Caterpillar's net profits for January and February 1957 totaled $9.7 million, as against $7 million for the same period last year.

Allis-Chalmers also told ENR that its crawler tractor sales were strong enough to warrant maintenance of the present production rate, adding that inventories were at a satisfactory level.

All three firms, International Harvester, Caterpillar and Allis-Chalmers, commented that because of certain bottlenecks that had developed in the new federal highway program, the full effects would not be felt at the construction equipment level this year.

Quality Declining

Statistics users seek better federal figures

The construction industry and other industries and firms that rely on government statistics as market guides have formed a Federal Statistics Users Conference in an attempt to improve coverage, quality and promptness of U. S. government statistics.

The newly formed organization is particularly important to the construction industry. While construction depends to a great extent on federal statistics to measure trends in production, shipments and sales of construction equipment and materials, industry users complain—and government fact gatherers concede—that many of the statistics collected are poor in quality and coverage and are available only after waiting a long time for processing and printing.

Federal officials say the quality of the statistics is declining largely because federal agencies are unable to get additional funds needed to upgrade and revamp the data to reflect important developments in construction materials and equipment.

The Departments of Commerce and Labor currently spend about $700,000 a year for construction and housing statistics. In addition, Commerce spends a relatively small sum for production and shipments data for materials and equipment reported in Facts for Industry and in Periodic Census of Manufacturers releases.

The size of the construction market to be covered by the federal fact gatherers has ballooned in recent years, but the amount spent for government construction statistics has not kept pace. This, some observers say, has resulted in a serious decline in the quality of the information.

While the government increased its statistics spending by $3 million in fiscal 1957 (to $30 million) and has budgeted of $5 million increase (to $35 million) for fiscal '58, the construction industry will get little or no benefit from the added expenditures, most of which are earmarked for agriculture and demographic statistics.

The Federal Statistics Users Conference hopes to expand its membership to the point where it can work closely with government agencies in developing better statistics.

One of the first goals of the group is to persuade government agencies to rely more heavily on sampling to cut costs and speed availability of data.

Research Firm Optimistic About Future Steel Supply

There should be more than enough steel to go around in the period from 1957-60, according to the research firm of Herman B. Director Associates, of Washington, D. C. In its report, Commercial Outlook for Steel, 1957-60, the research firm says steel demand probably won't sustain production at more than 90% of capacity.

This report predicts that steel demand will increase by about 4% this year to 86 million tons of finished steel products, representing 121 million tons of ingots.

By 1960, the report forecasts steel demand will rise to 92 million tons of finished steel, accounting for 130 million tons of ingots. This demand would be equal to 89% of the 146 million ingot ton capacity that the steel industry hopes to achieve through expansion by 1960.

If the forecasts prove realistic, the construction industry can expect a substantial improvement in steel supply and prompter deliveries. This is especially true because current steel expansion programs are emphasizing greater output of structurals, plates and tubular products.

Retail Lumber Sales Slide 13% Below Year Ago Level

Retail sales of 1,689 lumber yards in January dropped 8.6% below December 1956, and fell 13.2% below January 1956, according to the National Retail Lumber Dealers Association.

The sharp decline in the overall figure was not shared equally by all regions. On a comparable year ago basis, yards in the following areas reported only slight sales declines: Pacific, 0.3%; Middle Atlantic, 1.1%; South Atlantic, 2.7%; New England, 5.1%; and East South Central (Kentucky, Tennessee, Alabama and Mississippi) 7.1%.

Sales dropped 20% or more below year ago levels in the North Central, Mountain and West South Central states.

Equipment Finance

Local bankers hold key to federal road program

Financing of construction equipment for the expanded federal-aid highway program can be handled without a special federal lending agency if bankers work realistically with equipment distributors at the local level.

That was the assertion made last week by L. Miner Doolen, president of the Associated Equipment Distributors, speaking before the National Credit Conference of the American Bankers Association.

Mr. Doolen criticized the policy of many small town bankers who have traditionally avoided construction equipment loans because of poor experience with such paper in the nineteen-thirties.

The roadbuilding industry has come of age and now represents less of a risk to lenders than many other industries, the AED president said.

Quoting Dun & Bradstreet figures, Mr. Doolen told the bankers' conference that exactly 33 of the 1,834 construction failures reported in 1956 occurred among highway contractors—less than 2%.

The rate of failures among highway contractors for the most recent 12 months reported was 25% below the rate for all manufacturing, Mr. Doolen said.

Calling for a closer relationship between the equipment distributors and the lenders, Mr. Doolen told the bankers that the Associated Equipment Distributors, within the past 90 days, formed a new Committee on Equipment Financing. He suggested to the credit conference that the American Bankers Association might want to follow suit.

Such a move, Mr. Doolen feels, would pave the way for closer liaison in financing an estimated $300 million to $350 million worth of additional new construction equipment that will be needed for the new highway program in 1957 alone.

(B&F continued on page 112)

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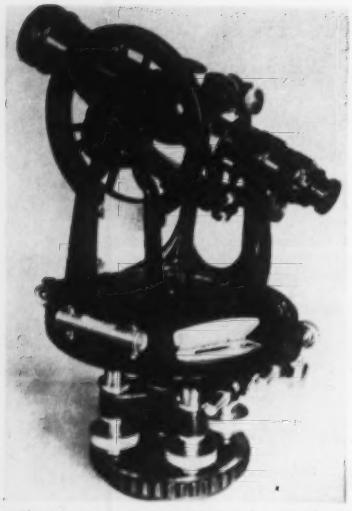

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Bid Battle Goes to Court

$9.8 million award to Blake Construction Co. under fire by second low bidder on Maryland state office building

A dispute over a $9,754,885 contract for construction of a Maryland state office building in Baltimore (ENR Feb. 21, p. 292) has moved from the hearing rooms of the legislature into the courts.

A suit to invalidate the contract award to Blake Construction Co., of Washington, D. C., has been filed in Baltimore Circuit Court by Terminal Construction Co., of Wood Ridge, N. J., and Baltimore Contractors, Inc., of Baltimore, joint bidders.

Plaintiffs also have asked the court to declare them low bidders and to permit them to inspect post bid negotiations carried on by Blake Construction Co. and the Maryland Department of Public Improvements.

Named as respondents in the suit are the governor, the comptroller and treasurer of Maryland, Blake Construction Co. and James J. O'Donnell, state director of public improvements.

• **Bids exceed appropriations**—Court papers filed by the plaintiffs allege the following chain of events:

When bids were opened last Dec. 27, the state had $11,825,000 available for a project including a 15 story main office building and a six story structure to house the State Road Commission.

Because Blake Construction Co.'s low bid of $12,982,000 for the entire project exceeded the funds available, the state board of public works directed Mr. O'Donnell to meet with the Blake firm to see what features could be eliminated, according to the complainants' suit.

The suit alleges that Mr. O'Donnell recommended changes to reduce the cost of the project and suggested that all bidders be permitted to submit new offers based on these changes. But the board of public works refused to follow Mr. O'Donnell's plan, the suit charges, because board members felt the procedure would be unfair to the Blake firm.

Subsequently, Mr. O'Donnell and Blake Construction negotiated and, as a result, the board awarded a $9,754,885 contract to Blake, excluding the State Road Commisson building.

Terminal Construction and Baltimore Contractors contend their bid on the same specification would have been $9,768,000, but they add that they were unable to obtain a copy of the Blake contract to study details of the negotiated items.

• **Choice of subs claimed**—In addition, the second low bidder charges that Blake Construction Co. was permitted illegally to name more than one subcontractor for each of the trades involved in the construction. This is an advantage, the court has been told, which, if allowed to the complainants, would have reduced their bid $200,000—making their bid the lowest.

Despite the start of the court action, state and city officials went ahead with official groundbreaking ceremonies for the new state office building, which will be the focal point in renewal of a section on the northwest fringe of the city's downtown area.

The suit was filed after Victor Frenkil, president of Baltimore Contractors, was rebuffed repeatedly in demands to see records of the negotiations between Mr. O'Donnell and Blake Construction Co.

The dispute first erupted before a General Assembly committee Feb. 6 when Mr. O'Donnell charged that Baltimore Contractors and Terminal Construction had attempted to "manipulate" changes in specifications to insure their winning the contract.

Mr. O'Donnell also attacked L. P. Kooken, structural engineer for the project, for making recommendations on architectural matters that Mr. O'Donnell felt were not within Mr. Kooken's province.

After the initial verbal fireworks, a public controversy continued, leading to the present litigation.

Detroit Builders Urged To Add Space, Cut Frills

Detroit needs a large number of $12,500 homes with a maximum of space and a minimum of non-essentials, homebuilders were told last week by Wendell O. Edwards, director, Detroit Insuring Office of the Federal Housing Administration.

Reporting on a survey made by the government agency, Mr. Edwards said the FHA will approve mortgage insurance applications for lower cost homes that omit many of the items considered necessary in high price dwellings.

Mr. Edwards suggested builders might profit from a sales standpoint by omitting from homes such "frills" as expensive paneling, built-in equipment.

He reported an agency survey cover-

ng three counties showed that unsold homes represent less than a one month inventory for the building industry. He described this as "normal and perfectly sound".

More than 90% of the unsold homes are in the $15,000 to $20,000 class.

Mr. Edwards told the builders: "Detroit home buyers right now are getting more square footage of living space per dollar than residents of any metropolitan area in the nation except Phoenix. Further, they are getting better quality per dollar than any other place in the country."

He warned that higher wage costs and an inevitable rise in the cost of lumber will result in significantly higher housing costs by early summer.

It's Up to the Voters

Authority financing bill may spur water projects

Michigan's legislature has approved a water authority bill that is expected to spur water transmission construction projects, including a 30 mile pipeline from Lake Michigan to the Grand Rapids area.

The bill, which has the backing of Gov. G. Mennen Williams, permits municipalities with a combined assessed valuation of $200 million to join in forming water authorities with power to bond for improvements.

A protection feature for taxpayers was inserted in the bill before its passage. It permits a referendum vote of taxpayers before the bond issue can be approved.

Grand Rapids built a 28 mile pipeline to Lake Michigan more than 10 years ago, but it now is inadequate to serve the area. Several communities, including Grand Rapids, sponsored the water authority bill in the legislature. As soon as it is signed by the governor they are planning to set up an authority to issue $22.5 million in bonds to finance the new pipeline.

The legislation is expected to benefit other regions of the state, including the Detroit metropolitan area and the Flint and Saginaw areas.

Court Says Highway Funds Can't be Used for Garage

The Ohio Supreme Court has ruled that state highway improvement funds cannot be used to finance preliminary surveys for the $4.5 million underground parking garage in Toledo.

The high court said it was unconstitutional to use $64,000 marked for

(Continued on page 114)

Construction Markets

Atlanta: An On-the-Spot Report

Construction in the Atlanta area is taking "a breather."

A variety of reasons are being given for the current slack in large-scale construction for industrial, commercial and residential purposes.

The effect of tight money has become something of a convenient catch-all. Certainly, the absence of easy credit has been felt. Yet other factors must be given equal weight.

During the past decade, Atlanta has built with something akin to frenzy. Hospitals, schools, churches as well as other types of buildings have sprung up all over the metropolitan area. Geogia has spent some $250 million over the past several years on its school system, with Atlanta and Atlanta contractors getting their share of the business.

Since the end of World War II, Atlanta's commercial district has grown steadily along Peachtree St. and West Peachtree St. Even as late as January of this year, such concerns as Retail Credit Corp. and Alcoa Aluminum were completing their own office buildings on Peachtree. Such buildings are rarely over three or four floors but combine modernity and available parking space for employees and customers with a prestige address.

By the end of this year, however, nearly 1.5 million square feet of office space had been added to the facilities available in the heart of downtown.

These two factors in the commercial field have contributed to a temporary saturation.

"Caught-up" best describes the present situation in other construction. But here the picture is somewhat brighter. Such varied projects as a $12 million farmers' market and a $2 million synagogue will begin taking shape shortly. And the Atlanta Airport is due for immediate improvements that may cost $5 million.

In purely industrial construction, the present market also is slow from an Atlanta viewpoint. The new $15 million Westinghouse plant at Athens —some 70 miles away—is being built by a South Carolina concern, Daniel Construction Co. However, an Atlanta firm, Henry Beck & Co., is doing the site grading and will construct General Motors' new $5 million parts depot at Atlanta. The industrial field repesents a checkered pattern.

On the housing front, fewer units are planned. But this is offset somewhat by higher prices.

Generally, the large speculative builder no longer operates. He blames the scarcity of mortgage money and a decline in demand.

Conventional mortgages still are available, carrying interest rates of 5½% to 6%. To a lesser degree, funds are available for mortgages insured by the Federal Housing Administration. But the market for Veterans Administration guaranteed mortgages is inactive.

The volume of lower priced housing ($9,000 to $11,000) planned for the Atlanta area is considerably lower than in 1956. Higher priced units ($17,000 and up) are more numerous.

Competition is severe; in some cases, homebuilders have turned to other construction fields.

One bright spot is the $86.9 million Fulton County-Atlanta bond issue, which will face its test at the polls April 17. Construction men are eyeing the issue hopefully. If recent public hearings on the bond issue are any indication, it will be approved. Not a citizen showed up in opposition.

Among the projects at stake are a waterworks filter and distribution plant ($45 million), roads and bridges ($26.5 million) and public buildings ($12.3 million).

The Atlanta Expressway System still is inching along despite right-of-way problems. As planned, the metropolitan highway system will cost $100 million. Half of this expenditure is in the far-distant future, however. More than 18 miles has been completed; an additional 2.04 miles of the downtown connector remains to be let to contract. Now under contract are 1.82 downtown miles.

The rapid and unpredictable rate at which the Atlanta area's population is growing holds the key to future construction. Here there is cause for general optimism. Only three years ago city planners were estimating an Atlanta area population of 1 million by 1970. Now the estimate is 1 million by 1960.

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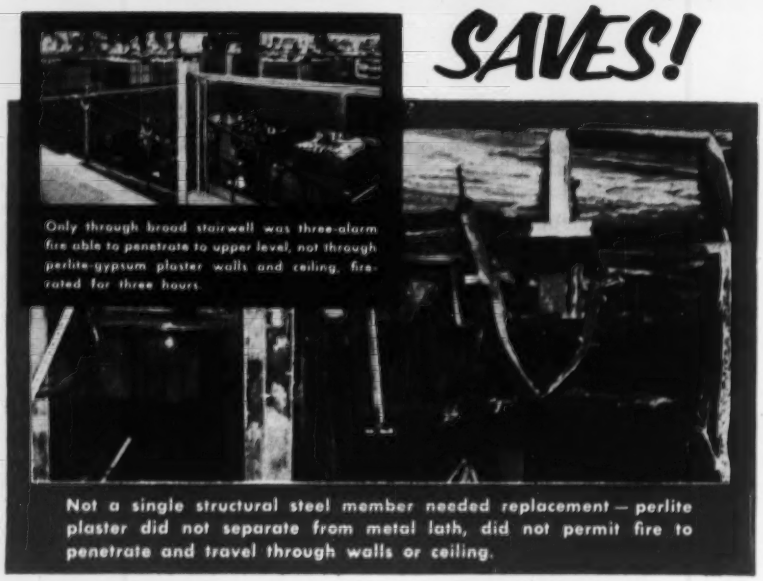

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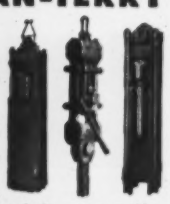

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highway improvement to finance studies for this type of facility.

The Underground Parking Commission had been authorized by the Ohio legislature to use highway funds for planning. This authority was challenged by Olen Grandle, who operates parking lots in Columbus and Cincinnati. Lower courts denied Grandle the injunction he sought, but the Ohio Supreme Court overruled the earlier decision. It said highway improvement funds may be used only for "statutory highway purposes."

The high court ruling did not affect the part of the legislation providing for the structure to be built with revenue bonds, to be paid for out of garage profits.

Raymond Concrete, M C & S Increase Their Earnings

Raymond Concrete Pile and Merritt-Chapman & Scott both increased their earnings substantially in 1956.

Raymond's net income was up 46% over 1955, mostly because of a 36% increase in volume of completed work. Net earnings before taxes totaled $8.6 million last year. After tax earnings were $4.5 million.

Merritt-Chapman & Scott boosted net earnings 20% over 1955. After tax income was $16.8 million, including net earnings of $12.9 million and a special credit of $3.9 million as net profit from the sales of certain subsidiaries. MC & S has a current backlog of $530 million, as against $440 million a year ago.

Eastern Cement Mills Plan 10 to 15 Cent Price Boost

Portland cement prices will go up April 1 at several eastern mills, which have announced price increases ranging from 10 to 15 cents a barrel.

For some of the mills, this will be the second price increase in six months. The mills blame the April price boost on higher materials costs and on a freight rate increase which went into effect last December.

Western mills generally expect to hold their current price levels through the second quarter. (Many of these western mills raised prices at the beginning of this year.)

Lehigh Portland Cement, as an illustration, plans to maintain its present prices in the midwest area through June. But, Lehigh will raise prices April 1 at its mills in Maryland, Pennsylvania and New York.

Many observers feel that another round of cement price increases could come later this year.

Plumbing Contractors Plan To Enforce Code of Ethics

Members of the Plumbing Contractors Association of Chicago have adopted a code of ethics governing the industrial practices of the 75 year old group. Under the code:

- Members must guarantee the quality of their work for one year after completion.
- Contractors must follow "ethical pricing policies," based on reasonable profit after expenses for material and labor.
- Contractors must observe strictly the plans and specifications of the owner or prime contractor unless changes or substitutes are approved in writing.
- Contractors must follow strictly any prevailing ordinances and statutes concerning public health and must publicly support safety in the plumbing field.

The ethics committee of the association has been given the power to enforce the code of ethics. Penalties for code violations range from a minimum of $100 to a maximum of $5,000.

Business Briefs . . .

- **Big spender**—E. I. du Pont de Nemours & Co. spent $157 million in 1956 to improve and expand plants and laboratories and to build new ones. This compared with $119 million spent in 1955. DuPont spent $77 million on research and development last year, not including laboratory construction.
- **Trail blazers**—Construction workers, young couples on the move, and retired persons apparently are turning to trailers for homes. Last year the mobile homes industry produced 120,000 units, a 25% jump over 1955. Trailer sales now top $500 million. The mobile home market draws 50 million lb of aluminum a year for siding, windows and doors, according to an industry spokesman. A single large trailer takes as much as 800 lb. The expanding trailer market seems to be opening a new field for building material and product suppliers.
- **Sharp pencils**—Only $9,000 out of $3.8 million separated the two lowest bidders at a bid opening for New York City's Sheepshead Bay High School. Low bidder was Colmar Construction Co., with a bid price of $3,831,000. Three of the five bidders on the school were under the architect's estimate of $3,944,000. This situation has become more common in New York in recent months, contrasting with the early months of 1956 when contractors' prices generally ran considerably above cost estimates.

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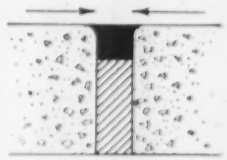
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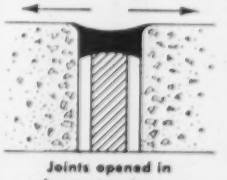
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States Ponder New Benefits

Unemployment, workmen's compensation laws face overhaul as AFL-CIO suggests Congressional probe

Reflecting the currently keen interest in modernizing and liberalizing state unemployment and compensation laws, Gov. G. M. Williams of Michigan has asked his legislature to raise jobless benefits to 50% of a worker's average wage plus $5 for each dependent and to increase workmen's compensation benefits to 75% of weekly wages. Other proposals including one in New York for higher jobless benefit taxes on seasonal industries such as construction, have been introduced in at least 27 states.

Forty-two state legislatures have been in session and three more will convene in April and May. Only states without a 1957 session are Kentucky, Mississippi and Virginia.

• **Unemployment compensation** – Gov. Williams' proposal, which is in line with the Eisenhower Administration recommendations, however, would establish as a ceiling for jobless benefits a figure equal to two-thirds of the state's average wage in covered employment. Duration of benefits would be set at 26 weeks.

Idaho and Wyoming have already passed liberalizing amendments and various proposals are now pending in Arkansas, California, Connecticut, Iowa, Maryland, Michigan, Minnesota, Missouri, Montana, Nevada, New Jersey, New York, Oregon, Vermont, Washington, West Virginia and Wisconsin.

Embraced in the proposals are increases in the size and duration of benefits, changes in eligibility requirements, integration with privately established supplementary unemployment benefit plans, and revisions in the tax structures.

Of particular significance is a pending New York proposal to increase the tax paid by seasonal industry employers whose employees have received in benefits more than the employers have paid in taxes. The construction and apparel industries would be the hardest hit and, according to State Industrial Commissioner Isador Lubin, the bill would subject seasonal employers with negative balances to the highest unemployment insurance tax in the nation.

• **Workmen's compensation** – Existing workmen's compensation systems are receiving as much attention with liberalization proposals presently pending in California, Connecticut, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Montana, Nevada, New Hampshire, New Jersey, New York, Oklahoma, Texas, Vermont and Wisconsin. Amendments have already been passed by the legislatures of Colorado, Idaho, South Dakota, Washington and West Virginia.

Bulk of the proposals entail increases in temporary and permanent disability and death benefits, but a number encompass such substantive revisions as redefinition of compensable diseases and disabilities, broader coverage, different eligibility requirements, new provisions relating to the use of private insurance companies and changes in accounting and taxing procedures.

Few of the proposals, however, measure up to the recommendations of the AFL-CIO, which in the February issue of its "Economic Review," suggested a full Congressional investigation of the issue, with particular emphasis on the inadequacy of the amount and coverage of benefits and the costly services of compensation funds by private insurance companies. The AFL-CIO contends that the present systems no longer guarantee injured workers a reasonable standard of living and are critically unrealistic in their treatment of death and dismemberment benefits, compensable diseases, medical care and rehabilitation. At the same time, the AFL-CIO claims, insurance companies have become the principal beneficiaries and, to the advantage of lawyers, the systems have grown expensively legalistic for claimants.

AFTE Wins Election

Subprofessionals vote to join AFL-CIO union

The American Federation of Technical Engineers (AFL-CIO) has succeeded in organizing a group of subprofessionals employed by Merritt-Chapman & Scott Corp., prime contractor on the $130 million Patapsco River tunnel project in Baltimore.

In a representation election conducted by the National Labor Relations Board on Feb. 15, M-C&S rodmen, instrument men and inspectors working on the tunnel voted to have AFTE as their official bargaining agent. Negotiations for a labor contract were commenced immediately and Russell M. Stephens, international union president, predicted that "substantial increases" would be obtained.

The organization drive of AFTE, conducted by Local 152 with headquarters in Philadelphia, had culminated earlier in a 2 day work stoppage at the tunnel project when a picket line was established. Target of the picketing, initially directed at M-C&S only, later embraced Singstad & Baillie, consulting engineers on the tunnel, when two S&B employees joined M-C&S employees on the picket line. The strike ended when M-C&S agreed to submit the issue to the NLRB. No effort was made officially by the union to seek an election among employees of the engineering firm, which, after regarding its picketing workers as "ex-employees", offered to consider their applications for reemployment.

According to Mr. Stephens, the Merritt-Chapman & Scott case represents the first time the union has organized subprofessionals in Maryland. Plans are under way, he said, to organize other subprofessionals in the Baltimore area. Mr. Stephens claims that AFTE has succeeded in unionizing similar groups in Pennsylvania, Delaware and New Jersey.

Apprentice Training

AGC review sees need for a more effective program

Apprentice training programs now in existence are too few in number and some of them are perhaps too long in duration.

These were the principal observations of the National Apprenticeship Committee of the Associated General Contractors of America, Inc., when the committee took a look at apprenticeship progress during the 38th annual meeting of the AGC earlier this month.

Although the committee saw some encouragement in present trends, it reported that the carpenters, cement masons, plasterers, iron workers and painters are all losing craftsmen faster than they are replacing them; bricklayers and roofers are training more than they are losing; and plumbers, electrical workers and sheet metal workers are either holding their own or improving their ratio of journeymen lost to journeymen gained.

While noting the need for greater contractor interest, the committee suggested that the present failure to meet current needs may stem in part from

unnecessarily high standards in some of the trades. Implicit in a definition of apprentice training adopted by the committee as a guide to AGC members is the premise that training programs should be such as are sufficient to produce "qualified journeymen". In line with this definition, the committee recommended that the National Joint Apprenticeship Committees for the bricklaying, carpentry and cement masonry trades review their present standards to see if their related training requirements go beyond this scope.

Two other committee recommendations, aimed at making the AGC program generally more effective, are these:

- That a Liaison Committee of one member from each of the 12 districts be established to coordinate AGC efforts at the local and national levels. Committee members would attend, in an advisory capacity, meetings of the National AGC Apprenticeship Committee and each member would serve as committee secretary to his respective district apprenticeship committee.
- That consideration be given to the formation of a Division or Department of Apprentice Training in the national AGC headquarters.

In reviewing the progress that the association itself has made, the committee said that reports from the AGC's 12 District Apprenticeship Committees indicate that apprenticeship activities are being increased in many areas but that in others there is room for needed improvement. And it reported that out of a possible 102 AGC chapters classified as building, members in 61 of them are hiring apprentices.

Labor-Management Study Aided by Labor Awards

AFL-CIO President George Meany last week announced that the William Green Memorial Fund has approved $323,000 worth of grants.

Bulk of the grants are for educational purposes and two are for the promotion of education in the field of labor-management relations. The latter awards, in the amount of $50,000 apiece, are to the University of Illinois and Rutgers University for construction of a Labor-Management Institute at each university. Both grants are conditional on the raising of the balance of the necessary funds by July 30, 1959.

The William Green Memorial Fund was established in memory of Mr. Green, former AFL president.

Craft Jurisdiction

Industrial union dispute again defies resolution

The subcommittee of the AFL-CIO Executive Council met again without success on Mar. 11 to continue its search for a solution to the jurisdictional conflict between the building trades and industrial unions.

Efforts to find a solution have been under way since the AFL-CIO was formed. Two committees have been working on the problem. Concrete proposals have been advanced by Harry Bates, David McDonald and AFL-CIO President George Meaney. None have gained acceptance, although the Industrial Union Department of the AFL-CIO reports that it has favored the arbitration aspects of each proposal. Present indications are that the chief stumbling block lies in the approach to the problem—with the building trades preferring adoption of some clear-cut and favorable lines of jurisdiction and the industrial unions hoping to see a preservation of the status quo by ad hoc settlement of disputes on the basis of past practice.

As reported to the building trades by plumbers' President Peter Schoemann, who sits on the AFL-CIO jurisdictional subcommittee, the Meany proposal, as outlined on Mar. 11, would give building and construction work to the building trades and production work, including running maintenance, to industrial unions; disputes over major repairs, changeovers and relocations of existing facilities—perhaps the most ticklish of all the problems—would be settled on the basis of past practice. Schoemann indicated that some of the IUD members would not consent to the blanket giving of new construction to the building trades.

IUD's apparent interest in avoiding definite jurisdictional assignments is reflected in the current issue of its monthly "Bulletin." It describes President Meany's earlier proposal for arbitration, said to be acceptable to IUD, as one that "would establish machinery for the resolution of specific disputes. Its intent would not be to establish lines of jurisdiction or limit organizing jurisdiction of any union but rather to settle specific disputes which arise. . . ." The position was more vividly stated by IUD President Walter Reuther, when he said, in his report to the department's executive board: "A thousand Solomons cannot unscramble the omelet. We have got to live with that omelet. The question arises, how do we live with that omelet, sensibly and surely, so that we can work together on the big things and avoid dividing the labor movement on this kind of problem." His answer: An arbitrator, who, looking at past practices, would decide disputes "on the facts that make up the omelet" without trying to "unscramble the omelet."

Taft-Hartley Amendments Submitted to Congress

With President Eisenhower's approval, Labor Secretary James P. Mitchell has submitted to Congress in bill form a construction industry proposal for amending the Taft-Hartley Act.

If favorably received, the bill would accord contractor associations the status of employer for collective bargaining purposes, permit NLRB certification of construction unions without a prior election, and legalize employer contributions to jointly administered training funds.

Both management and labor within the industry have agreed to the proposals (ENR Mar. 14, p. 174).

Indictments Handed Down Against Teamster Aides

Three officers in the teamsters union last week pled not guilty and a fourth failed to appear for arraignment on a charge of contempt of the U. S. Senate. Among those charged with refusal to answer questions before the Senate Permanent Subcommittee on Investigations last January are Frank Brewster and Einar Mohn, both international vice presidents. Mr. Brewster is also chairman of the Teamsters' Western Conference. The officers had been advised by legal counsel not to testify on the ground that the committee had no jurisdiction over union affairs.

The Senate subsequently appointed a new committee known as the Select Committee on Improper Activities in the Labor or Management Field. Headed by Sen. John McClellan, that committee, which has not yet undertaken management activities, is continuing the probe of the teamsters union.

Following the contempt indictment, a federal grand jury on Mar. 19 issued indictments against James Hoffa, Ninth Vice President of the teamsters union and chairman of the Central Conference, and Hyman Fischbach, a Florida attorney. Both are charged with obstructing justice by attempting to obtain information from the McClellan committee.

Plumbers, Steamfitters Sign Two-Year Contract

Plumbers and steamfitters in the Portland, Ore., area have reached agreement with employers on a two-year contract that grants a 38 cent hourly wage increase.

Present wage is $3.35 per hour, plus 10 cents an hour in vacation pay. The new agreement calls for a 5 cent increase in basic rates retroactive to Mar. 4, a 10 cent health and welfare contribution on April 1, an 8 cent wage increase on Sept. 1, another 10 cent wage increase next Mar. 1, and a final increase of 5 cents on July 1, 1958.

State Highway Workers Ask for Pay Increase

The North Carolina State Highway Employes Association and the North Carolina State Employes Association have joined forces to support the demands of the more than 17,000 workers they represent for a 15% across-the-board salary increase. Result is a bill introduced in the state legislature on Feb. 18 to effect such a pay boost.

Gov. Luther H. Hodges and the State Advisory Budget Commission had earlier recommended an eight percent wage increase to be distributed on a selective basis.

Commenting on these recommendations, the two associations said: "We fear the adverse effect of these proposals not only because of their immediate effect upon the standard of living of state employes in general, but also upon the quality of service the state will be able to render the public through inability to hold its experienced employes for career service, or to attract competent replacements".

Labor Briefs . . .

• **Right-to-work**—A right-to-work bill has been defeated in Idaho. Passed by the House on a four-vote margin, it was killed in the Senate by three votes. Voting was bipartisan. Efforts to obtain a referendum have been started.

• **Prevailing wages**—The Maryland State Roads Commission has registered its opposition to a prevailing wage proposal before the state legislature. It says passage of the bill might cost the 12 year road program $25 million.

• **Jurisdiction**—A dispute between Washington, D. C., plumbers and laborers over installation of storm drainage pipes (18 in. cement) at an apartment project in Virginia has halted construction and has been referred to the NLRB and the Joint Board.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: April 9, 1957

Power Authority of The State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF BRIDGES
ON
STATE HIGHWAY ROUTE 345 AND FRANKLIN ROAD IN WADDINGTON ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-5-111025
ST. LAWRENCE CONTRACT NO. 33

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of bridges at Waddington on State Highway Route 345 and Franklin Road, St. Lawrence County, New York, until 10:30 A. M. Eastern Standard Time on the 9th day of April, 1957, at the Authority's office, 270 Broadway, Room 1305, New York, New York, at which time and place the proposals will be publicly opened and read aloud.

The work includes the construction of approximately 0.22 mile of highway and two bridges, each approximately 139 feet long. Alternate bids of either structural steel beams or precast, prestressed concrete beam for the superstructure of each bridge may be submitted.

All work shall be completed on or before August 1, 1958.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario and may be inspected by prospective bidders during office hours and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 10 percent of the gross sum bid.

The right is reserved to reject any or all bids.

PA-5-11025 W. S. CHAPIN
General Manager

Bids: April 9, 1957

Contracts 454 and 455

WEST DELAWARE TUNNEL

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, April 9, 1957, for the following two contracts for the construction of the easterly portion of the West Delaware Tunnel of the Delaware system, comprising about 19 miles of concrete lined pressure tunnel, circular in section and 11 feet 4 inches in finished diameter, and Shafts 5 to 7 inclusive, 14 feet in diameter, which will be circular in section and lined with concrete, all as set forth in the specifications:

CONTRACT 454, for the construction of about 60,000 linear feet of tunnel, including Shaft 5, approximately 760 feet deep, and Shaft 6, approximately 780 feet deep, located in the Towns of Rockland and Neversink, Sullivan county, New York.

CONTRACT 455, for the construction of about 42,000 linear feet of tunnel, including Shaft 7, approximately 650 feet deep, and the tunnel outlet, located in the Town of Neversink, Sullivan county, New York.

A bidder on both of these contracts may, if he so desires, specify in the bid form of either or both contracts, that he will agree to make a percentage reduction from the total cost of the contract, if both contracts are awarded to him.

Pamphlets of the two contracts containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312 at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

U. S. Government

Bids: June 25, 1957.

Government of Iraq Development Board and Ministry of Development Sulphur Recovery Project From Natural Gas

The Development Board and Ministry of Development of the Government of Iraq invites qualified firms to tender for the engineering, supply, erection and commissioning of a plant for the recovery of both elemental sulphur and liquefied petroleum hydrocarbons from natural gas.

Full information regarding this tender can be obtained on and after March 25, 1957, from Iraqi Embassy.

All tender Documents are to be submitted in English to the Ministry of Development, D. G. Legal Affairs and Contracts on or before 12 noon, local time, on June 25, 1957.

Minister of Development

Bids: July 1, 1957

Government of Iraq Development Board and Ministry of Development Contract No. SPA/8 (1957) Basrah Housing Scheme

cipal item is furnishing and applying pro- from Contractors experienced in such works to tender for the construction of the housing scheme in Basrah.

The work Comprises the Construction of 1776 houses of various sizes and types, construction of main and interior roads, water and electrical installations, sewage system and any other incidental work which might be required at sector 1 & 3 of the Basrah Housing Scheme.

Full information regarding this tender could be obtained from Iraqi Embassy.

All tender documents are to be submitted to the Ministry of Development on or before 12 noon local time on July 1st, 1957.

Minister of Development.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4880) will be received at Boulder City, Nevada, until May 7, 1957, for furnishing labor and materials for protective surfacing for Hoover Power Plant and valve house roofs, Boulder Canyon Project, Arizona-California-Nevada. Principal item is furnishing and applying protective surfacing for Hoover Power Plant and valve house roofs; and other work. Completion time 150 days. For particulars, address Bureau of Reclamation, Boulder City, Nevada; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

U. S. Government

Bids: May 13, 1957.

Government of Iraq
Electrification of Northern and Central Iraq
Contract No. 13
Workshop Equipment

The Development Board and Ministry of Development of the Government of Iraq invite tenders from qualified firms for the Supply and delivery of the Workshop Equipment for the Dibis and Baghdad Power Stations.

Full information regarding this tender can be obtained on and after March 12, 1957 from Iraqi Embassy in Washington.

All Tender Documents are to be submitted in English to the Ministry of Development, on or before 12, noon, local time on May 13, 1957.

Minister of Development.

Department of Commerce, Bureau of Public Roads, March 12, 1957. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., APRIL 12, 1957, for the construction of Project 3F2, Natchez Trace Parkway, Chickasaw County, Mississippi. 8.445 miles Grading, Draining, Gravel Base Course, and other work from Old Mississippi Route 8 to the Woodland-Montpelier Road. The approximate quantities of the more important items are as follows: 783,200 cu. yd. Excavation and Borrow, 60,000 tons Gravel, 2,050 cu. yd. Concrete, 316,000 lb. Reinforcing Steel, and 5,600 units of Seeding. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Regional Engineer.

Department of Commerce, Bureau of Public Roads, March 13, 1957. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., APRIL 19, 1957, for the construction of Project 3F1, Natchez Trace Parkway, Chickasaw County, Mississippi. 7.874 miles Grading, Draining, Gravel Base Course, and other work from Mississippi Highway No. 32 to Old Mississippi Highway No. 8. The approximate quantities of the more important items are as follows: 566,600 cu. yd. Excavation and Borrow, 37,500 cu. yd. Gravel, 1,150 cu. yd. Concrete, and 5,000 units of Seeding. Minimum wage rates have been fixed as required by law. Plans, Specifications and proposal forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Regional Engineer.

Engineering News-Record

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Its distribution among the contractors of any one state is in proportion to the number of contractors situated in that state. The Official Proposal Columns of *Engineering News-Record* offer precisely the same efficient service to municipalities, counties, state and federal departments in every section of the United States.

OFFICIAL PROPOSALS

Bids: April 9, 1957.

New York City Invites Bidders
Pumping Plant Demolition

SIX 20 M.G.D., 600 FT. LIFT (5 STAGES) VERTICAL-MOTOR-DRIVEN PEERLESS PUMPS; SIX 4000 VOLT, 900 R.P.M., 2500 H.P. SYNCHRONOUS MOTORS, COMPLETE WITH MOTOR CONTROLS AND AUXILIARY EQUIPMENT; TWO H.P. 6000# CHLORINATORS WITH EVAPORATORS AND SCALES; HOISTING, HEATING AND VENTILATING EQUIPMENT. PUMPS AND EQUIPMENT IN EXCELLENT CONDITION; FIVE YEARS OLD, AND OPERATED FOR SEMI-MONTHLY TEST RUNS ONLY.

Sealed bids will be received by the Commissioner of Water Supply, Gas and Electricity, at room 2351, Municipal Building, Manhattan, N. Y. 7, N. Y. as follows until 10:30 A. M. Tuesday April 9-1957. For furnishing all labor and material necessary and required for removing all equipment from and demolishing the Hudson River Pumping Station near Chelsea, Dutchess County, N. Y. ALL MATERIALS AND EQUIPMENT IN, OR FORMING PART OF THE STATION SHALL BECOME THE PROPERTY OF THE CONTRACTOR. Prospective bidders may obtain a copy of the contract documents and specifications by sending a certified check for $1.00 made payable to the order of the Comptroller of the City of New York, to the Department of Water Supply, Gas and Electricity, Room 2351 Municipal Building, New York 7, N. Y.

U. S. Government

GOVT. OF DIST. OF COL., DEPT. OF HIGHWAYS, March 19, 1957. SEALED PROPOSALS will be recd. in Rm. 404, 499 Pa. Ave., N.W., Wash. 1, D. C., until 2 PM, EST, April 16, 1957, and then publicly opened and read for constr. MILITARY ROAD UNDERPASS AT 16TH STREET, N.W., incl. removal of exist. bridge and constr. of concrete rigid frame bridge (Fed. Aid Project No. U-4963), consist. of approx. 8,525 cu. yds. structural excavation; 4,680 cu. yds. borrow excavation; 1,200 cu. yds. footing concrete; 1,475 cu. yds. wall concrete; 925 cu. yds. superstructure concrete; 277,260 lbs. reinf. steel; 1,000 lin. ft. aluminum railing; 10,050 sq. ft. stone facing; 4,100 cu. ft. stone coping; and 2,397 cu. ft. dimensioned stone. Proposal forms, plans and specns. obtainable from: Supervisor, Contr. & Bond Section, Procurement Office, D. C., Rm. 406, 499 Penn. Ave. N.W., upon deposit of a certified check for $30.00 per set, payable to Collector of Taxes, D. C. (Tel. NA 8-6000, Ext. 2378).

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4877) will be received at Camp White, Oregon, until April 25, 1957, for furnishing labor and materials for Earthwork, Concrete Canal Lining, and Structures for Howard Prairie Delivery Canal, Station 0+09 to Station 539+00 and Soda Creek Feeder Canal, Rogue River Basin Project, Oregon. Location near Ashland, Oregon. Principal items are 194,300 cu. yds. excavation; 8,560 cu. yds. concrete; 12,800 barrels furnishing and handling cement; furnishing and laying 2,763 lin. ft. 48-inch diameter concrete pipe siphon; and other work. Completion time 660 days. For particulars, address Bureau of Reclamation, P. O. Box 386, Camp White, Oregon; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4816) will be received at Huron, South Dakota, until April 30, 1957, for furnishing labor and materials for stage 04 additions to Sioux Falls Substation, Missouri River Basin Project, South Dakota. Location near Sioux Falls, South Dakota. Principal items are 2,100 cu. yds. excavation; 310 cu. yds. concrete; furnishing and erecting 116,000 pounds steel structures; installing three 20,000-Kva, 220-Kv single phase power transformers; and other work. Completion time 400 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: April 23, 1957.

Contract BP-140.003

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER 2
PURCHASE OF STRUCTURAL STEEL

Sealed proposals for the furnishing, fabrication, storage and delivery of structural steel for the transit shed to be erected for future Pier 2 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 23, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 28, 1957.

Bids: April 23, 1957

Contract BP-140.009

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER 2
STRUCTURAL STEEL

Sealed proposals for the erection of structural steel for the transit shed to be erected for future Pier 2 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 23, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, March 28, 1957

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4881) will be received at Winters, California, until May 8, 1957, for furnishing labor and materials for constructing Putah South Canal from Station 1017+00 to Station 1476+24.52, Solano Project, California. Location near Fairfield, California. Principal items are 602,000 cu. yds. excavation; 14,600 cu. yds. concrete in canal lining; 1,630 cu. yds. concrete in structures; 2,522 lin. ft. concrete pressure pipe; various radial gates, metal slide gates, and miscellaneous installations; and other work. Completion time 480 days. For particulars, address Bureau of Reclamation, Winters, California; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

EMPLOYMENT OPPORTUNITIES

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The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

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Subject to Agency Commission.

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P. O. Box 12, N. Y. 36. April 11th issue closes March 25th.

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Soils Engineer—prefer man with MS in soils about 1945 or 1946—to head up a design group in a firm of consulting engineers specializing in design of dams. Must be top-notch design engineer and supervisor. Salary open. Location Midwest. P-3942, Engineering News-Record.

Senior Cost Engineer familiar with the Uniform System of Accounts for electric utilities. Duties will consist of analyzing completed major construction projects for an Electric Utility. Experience with the Federal Power Commission or a State Public Service Commission would be desirable. Some experience with the Property Record Department of any Electric Utility would also be an asset. Indianapolis Power and Light Company, Employment Department, 1220 West Morris St., Indianapolis, Indiana.

Designers—Electrical and Piping . . . . . Power Plants and Industrial Buildings. Marbarry Corp., 120 Greenwich St., New York City 6, N. Y. REctor 2-3749.

Wanted Soil Mechanics, concrete and asphalt inspectors and technicians. Recent graduate with soil mechanics and concrete laboratory training may apply. Openings in field and laboratory for construction contracts of highways and large engineering projects in the middlewest. Send resume to: Westville Engineering Company, Inc., P. O. Box 67, Westville, Indiana.

Associate and assistant professors for fields of advanced strength, elasticity, dynamics and fluid mechanics. Dept. of Applied Mechanics, Univ. of Kansas, Lawrence, Kansas.

Bridge Designers and Draftsmen with experience for permanent positions. Forward full educational, employment and personal data with salary requirements. Macomber & Faber, 1824 North Fourth Street, Harrisburg, Pennsylvania.

Soils, Asphalt & Concrete Inspectors . . . Field & Lab Tech; also Party Chief & Instrument Man. O'seas. Mild Climate. Write Mr. Levy, Patchen & Zimmerman, 120 Greenwich St., NYC 6. REctor 2-4187.

Engineers with experience in municipal and industrial waste collection and treatment, or projects of related type. Midwest consulting firm with long established practice limited to sanitary engineering projects. Please send full details of education and experience, references and approximate salary requirements. P-4461, Engineering News-Record.

Teaching position in civil engineering and mechanics starting next September. Rank and salary dependent on qualifications. Address Department of Civil Engineering, Clarkson College of Technology, Potsdam, New York.

Engineer capable of layout and takeoff for Western New York Paving contractor. Reply P-4154, Engineering News-Record.

Superintendent for Western New York paving and excavating contractor. Reply P-4155, Engineering News-Record.

Mining and Smelting Engineer. For a mature experienced man a permanent responsible position is available, with large long-established firm. Headquarters Detroit and Windsor, Ontario. Please send full resume, in confidence if requested, to P-4518, Engineering News-Record.

WANTED IMMEDIATELY

First Class Structural Engineer wanted for large fabricating plant in the Southwest, fabricating steel for mill and tier buildings and all types of highway, turnpike and expressway projects.

Applicant should be about 35-40 years old with about 15 years experience in detail drafting office. Requirements of college graduate or registered engineer are not essential provided applicant has sufficient education and experience to qualify as a registered engineer.

Excellent opportunity for advancement—Ideal working conditions in air conditioned office—Company benefits—Insurance — Hospitalization — Vacation — Retirement — Paid Holidays and Sick Leave.

Enclose complete resume of personal history, education and experience.

P-4689, Engineering News-Record,
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS VACANT

Engineering Draftsman, Sanitary Engineering experience preferred. Permanent. Send vital statistics, experience, education, salary expected, samples of workmanship and date of availability to Russell & Axon, Box 1431, Daytona Beach, Florida.

Sanitary Engineer. Responsible designer, capable taking charge design small sewage treatment plants. Cleveland, Ohio. P-4553, Engineering News-Record.

Equipment Maintenance Superintendent. A challenging position is now open to the right man to take charge of one of the largest fleets of on and off highway trucks, bulldozers, cranes, shovels, and other contractors' equipment in the United States. Please write, giving employment history and salaries earned. P-4614, Engineering News-Record.

Graduate engineer with five or more years experience in the design and installation of electrical systems, air conditioning, and heating of commercial buildings. Position available with national retail Store establishment. Salary open. Give references, education and experience in your resume. Send qualifications to: P-4589, Engineering News-Record.

Gunite Estimator and a Gunite Superintendent —Middle Atlantic States. State age, experience, availability, salary desired. P-4640, Engineering News-Record.

Estimator-Project Manager or Assistant for building construction. Well established, growing Company in Rhode Island. Three to Five years contractor experience desirable. Good opportunity for advancement. P-4631, Engineering News-Record.

Head of Testing Laboratory—Soils, Asphalt & Concrete. O'seas. Mild Climate. Call or Write Mr. Levy, Patchen & Zimmerman, 120 Greenwich St., N. Y. 6. REctor 2-4187.

POSITIONS VACANT

Wanted—Dirt Superintendent to work for long established Illinois Contractor, operating in Illinois, Kentucky, Missouri. Salary commensurate with experience and ability. P-4323, Engineering News-Record.

Map draftsman for surveyors office located in Chicago, Ill. State qualifications in 1st reply and sample of lettering. P-4692, Engineering News-Record.

Structural Design Engineers and Graduate Civil Engineers—to design and detail buildings of all types. Excellent opportunities. Salary will depend on experience and ability. Replies will be treated confidentially. Ammann & Whitney, Milwaukee Office, 724 East Mason Street, Milwaukee, Wisconsin.

Structural Designers—Florida firm, long established, requires structural engineers, designers and draftsmen preferably with reinforced concrete bridge experience, age to 60, 40-hour week, air conditioned office, usual employee benefits, commuting distance to beach and seashore residential communities. Please furnish resume of experience and minimum starting salary requirements. Reply: P. O. Box 1048, Jacksonville, Florida.

Structural Engineer for responsible charge of important design work, with experience in marine structures, steel fabrication practice. Salary $800 up, depending on qualifications. P-4696, Engineering News-Record.

Concrete bar detachers and estimators wishing to become sales engineers and chance of advancement to District Managers—must be experienced. Chicago, Birmingham, Pittsburgh, Philadelphia. P-4707, Engineering News-Record.

City Engineer—Lewiston, Idaho (Pop. 17,000) invites applications for registered civil engineer for position of city engineer, superintendent of streets and waterworks. Desire man with supervisory and administrative ability, experienced in street, sewer construction and maintenance work. Salary open. Apply to Mayor D. K. Worden, 307 St. John's Way, Lewiston, Idaho.

Asphalt Supt: Must have complete knowledge of all phases of Asphalt construction—Mid States Area. Sewage Treatment Plant Supt. Mid States Area. P-4705, Engineering News-Record.

Sales Engineer-Estimator for structural steel and miscellaneous iron fabricator. Degree in architectural or civil engineering desirable. State experience, education, age, salary requirements and enclose snapshot with first letter to Southern Iron Works, Inc., P. O. Box 430, Alexandria, Va.

Graduate Civil Engineer or equivalent experience to assist City Engineer, location North-Central Indiana, salary $5,200-$6,500. Please give experience and full details in reply. P-4680, Engineering News-Record.

Field Engineer for a cement company. Graduate engineer, 25 to 30, eastern location, excellent opportunity. Send picture, resume of experience and salary expected. P-4651, Engineering News-Record.

Highway and Bridge Engineers, Designers. Experienced, for Permanent Positions in our New York Office. Excellent Salary Plus Overtime. Air mail resume to Farkas & Barron, Consulting Engineers, 5 Beekman Street, New York 38, N. Y., or call BEekman 3-8387.

Wanted: Paving and dirt Superintendent for long established New York contractor operating in New York and adjacent states. Salary commensurate with experience and—ability. P-4670, Engineering News-Record.

(Continued on opposite page)

ENGINEERS WANTED

Power Plant and Paper Mill Piping Estimator
Industrial Building Construction Estimator

Both must be able to make complete lump sum bid estimates, as well as handling contracts as project engineer after contracts awarded (buying, expediting, customer contracts, etc.). Will be based in Atlanta area.

Also Field Piping Engineers for work located in Southeastern states making material takeoffs, sketching pipe fabrication, etc. on paper mill and power plant jobs.

Apply by letter only to:

JAMES H. KAMINER
Kaminer Construction Corporation
Box 227, Chamblee, Ga.

POSITIONS VACANT

(Continued from opposite page)

Superintendent for all phases Asphalt Highway Construction in Arkansas. Hot Asphalt Plant Operation experience necessary. Position permanent. Salary open. Reply: Personnel, P. O. Box 2660, Little Rock, Arkansas.

City Engineer Wanted: general municipal engineering and administrative duties. Thoroughly experienced. Medium size growing city. Must be registered in Ohio. Salary $7800 per year. Write experience resume to Service-Safety Director, City Building, Mansfield, Ohio.

Wanted: Civil Engineers by City of 26,000 population. City Engineer: Salary open. Preference given graduate civil engineer with municipal and/or highway design experience. Junior Engineer: Salary $4316 to $5564. Must be able to act as Chief of Party and assume charge of minor engineering projects for field and office work. Apply City Manager, City Hall, Gloucester, Mass. Give references, experience, vital statistics.

Established Chicago organization wants an experienced man as an Estimator, experienced in building and bridge work, with highway experience desirable; must be U. S. citizen and resident of Cook County; steady work; liberal pension and vacation plans. Write giving full particulars as to age, education, experience, and required salary. P-4665, Engineering News-Record.

Civil Engineer wanted by a National Association with headquarters in Washington, D. C. Experience in highway materials desirable, especially concrete and bituminous mixes. Age 30-45. Salary open. Please give full experience in reply, which will be held confidential if requested. P-4653, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

Flooring Agents wanted: Detroit auto stamping mill now making steel anchor floor plates. Widely used by industry. Exclusive territories. Write on your letterhead. RW-4622, Engineering News-Record.

POSITIONS WANTED

Construction Engineer, 30, German, 9 years experience in field supervision, seeks position. Preferable foreign assignment. L. Loser, 759 Querbes, Montreal.

Project Manager-Superintendent. Heavy & bridge construction, 19 years experience. $200. PW-4332, Engineering News-Record.

Superintendent — Engineer — Estimator — Highways—44—BS in CE., PE—Penna—supervision, estimating and layout on Earthwork, Drainage, Structures and Paving. PW-4504, Engineering News-Record.

Construction Engineer BCE—9 years experience in building construction, field engineer, assistant superintendent, estimating, and expediting. PW-4464, Engineering News-Record.

Professional Engineer, wide experience, will prepare Budget Cost Estimates from outline plans and for Spec. for the profession, or Competitive L.S. estimates for Contractors. PW-4493, Engineering News-Record.

Superintendent or Construction Manager: Thoroughly experienced in handling all types of projects from the bidding to the completion stage. Will go anywhere. Available immediately. PW-4543, Engineering News-Record.

(Continued on page 124)

HIGHWAY ENGINEERS
DESIGNERS
DETAILERS

FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

- Permanent employment for qualified men
- Ample opportunity for advancement based on merit
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Plus: Employee Benefit and Retirement Plan, Paid Vacations, Holidays, Sick Leave. Blue Cross available

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Send resume to:

SVERDRUP & PARCEL ENGINEERING CO.

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Highway & Bridge Engineers
Designers & Draftsmen

Career opportunities for men interested in professional recognition.
Excellent working conditions and employee benefits including liberal retirement program.
Openings in Pennsylvania, Maryland, Florida, West Virginia, Mississippi and overseas.

Air Mail Resume TO R. L. SHAW, Personnel Director

MICHAEL BAKER, Jr., INC.

BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

MAINE

Three permanent positions, Civil or Mechanical Graduates.

Good Churches, Schools, Outdoor Recreation, Liberal Vacation, Pension, Paid Up Life Insurance, Sick Leave. Salary approximately $5,600.00.

Engineering Department, Bangor and Aroostook Railroad, Houlton, Maine. Tel. 2213

ARCHITECTURAL ENGINEER

Architectural Engineer between ages of 25 and 35 with interest in design of industrial buildings and structures.

Excellent opportunity with consulting engineering firm in Middle West. Liberal benefit plans and good working conditions.

Send resume of education and experience with statement of salary requirements to:

P-3222, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

HIGHWAY ENGINEERS

DESIGNERS, DRAFTSMEN, SURVEYORS

Experienced men, continuous and progressive opportunities as Project Engineers, Group and Squad Leaders. Long range Interstate and Expressway Program.

ROBERT W. LOWRY, INC.
227 Pine St. Harrisburg, Pa.

HIGHWAY ENGINEERS
BRIDGE DESIGNERS
DRAFTSMEN

Several years experience in highway or bridge design preferred but not essential if educational background and engineering experience is good.

This firm of Consulting Engineers is anxious to employ men who are interested in an opportunity to work on large scale highway projects in the Philadelphia area.

Excellent working conditions. Liberal employee benefits.

ALBRIGHT & FRIEL INC.
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PHILADELPHIA 2, PA.

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Offices

South Bend, Ind. East Lansing, Mich. Wheeling, Ill.

Benefits

Company pays Hospital Insurance, including dependents, vacations, Profit-Sharing-Retirement Plan. Low Personnel turnover. Salary advancement periodically with your advancement in ability.

CHAS. W. COLE & SON

220 W. LaSalle Ave. South Bend, Ind.

Executive Profit Maker Wanted

Age 40—55

We are a nationally known Company about to undertake a large expansion in the general construction field. We need a thoroughly experienced construction executive to take complete responsibility for this expansion. Eventually this position leads to one as an officer of the Company.

You will have to show proof of your past and present ability to sell, bid, negotiate, buy and perform on bids to industry. Our present activity varies from $75,000 to multi-million dollar bids.

Salary range will be equal to the talents required. Administrative ability and actual profit performance will be the basis for present and future income.

We presently operate throughout the United States and occasionally in foreign countries. Only persons who have had like experience should apply.

In accepting this position it will be necessary for you to bring along two or three qualified assistants to handle individual projects under your supervision.

We also have a comparable position open in our Estimating Department.

Write or wire for an appointment to discuss these jobs and your qualifications. Our people know of this ad. All inquiries will be held in strictest confidence.

P-4575, Engineering News-Record, Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

STRUCTURAL and MECHANICAL DESIGNERS

Having experience with heavy material handling equipment

Permanent Position For Qualified Men

HOSPITALIZATION INSURANCE VACATION

Phone or Write Chief Engineer for interview

THE WELLMAN ENGINEERING CO.

7000 CENTRAL AVE. Cleveland 4, Ohio Telephone EN 1-0842

RESIDENT ENGINEER

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With field experience for Assistant Resident Engineer and Inspectors—

Alabama & Texas

CONSTRUCTION ESTIMATORS

Virginia

Openings with Construction Division of large, expanding Manufacturing Company

Excellent Opportunities

P-4683, Engineering News-Record, Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SENIOR HYDRAULIC DESIGN ENGINEER

required by B.C. POWER COMMISSION at

Victoria, on beautiful Vancouver Island, to head up hydraulic design group in the Power Development Engineering Division. Position requires a graduate Civil Engineer qualified for registration in B.C., with at least 15 years engineering experience of which 10 years or more shall have been in positions of responsibility supervising engineers and draftsmen in the design of hydraulic structures associated with Hydro Electric generating stations; to undertake: All phases of Civil Engineering design including dams, bridges, tunnels, powerhouses, surge tanks, penstocks and related works including the hydraulic aspects of structures in reinforced concrete, steel and timber.

Preference will be given to men with personality and drive and a proven record of ability and accomplishment in progressively responsible engineering positions.

This is an excellent opportunity to secure a regular position with a rapidly expanding public utility in one of the great hydro power areas of the world. Excellent employee benefits, including a good pension plan. Salary open. Reasonable cost modern housing available within ten minutes drive of Head Office. Interested parties should write to Personnel Officer, B.C. Power Commission, Box 500, Victoria, B.C.

SALES ENGINEER

Excellent opportunity in Western Pennsylvania-Northern Ohio-parts of West Virginia sales territory of expanding company for engineer 28-35 years desiring sales, promotion and construction work. Graduate preferred but experience may be substituted. Highway and concrete engineering background desirable for contacts with highway departments, contractors and concrete products companies.

Permanent position with excellent opportunity for advancement. Attractive salary, company car and expenses with liberal company sponsored benefits.

SW-4659—Engineering News-Record Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ENGINEERS

Maintenance, Scheduling & Programming

Several graduate engineers with minimum 5 years' experience supervising maintenance engineering functions in oil refining or producing facilities, power plants, heavy industrial installations and supporting facilities. For work in Saudi Arabia as Staff Engineers.

High salary commensurate with background and experience; living allowance and all-inclusive benefits.

Submit resume including your telephone number to:

Recruiting Supervisor, Box 203

ARABIAN AMERICAN OIL COMPANY

505 PARK AVENUE NEW YORK 22, NEW YORK

CONSTRUCTION . . .

PROJECT MANAGER
PROJECT ENGINEER

For overseas project

Should have engineering degree plus extensive experience as project manager or project engineer on overseas installations.

Must be available on 30 days notice. Husband & wife quarters. Salary commensurate with background.

Send complete resume

P-4663 Eng. News Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

SUPERINTENDENT BUILDING CONSTRUCTION

Top flight man by growing company operating nationally. Give all pertinent data in reply including education, experience, salary, references and when available.

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 Montgomery, Ala.

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SOUTHERN PAPER CORPORATION
Industrial Relations Department
Calhoun, Tennessee

McKEE NEEDS
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Telephone TOwer 1-2300, Cleveland, Ohio
or write to Edward A. Kolner
Arthur G. McKee & Company
2300 Chester Ave., Cleveland 1, Ohio

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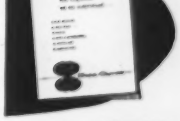
CREATIVE SALES ENGINEERING
IN THE SANITARY FIELD?

If you're a sales-minded engineer with sanitary experience . . . if you want to practice your profession as a creative individual . . . if challenge, variety and freedom of action appeal to you . . . you'll be interested in the opportunities for sales engineers in Dorr-Oliver.

Specifically, continued growth and expansion have created the need for engineers of varying levels of experience. Academically, B.S. or M.S. degrees in Civil or Chemical Engineering with sanitary option are preferred. Some experience with Federal, State or Local health agencies or in sanitary consulting or sales work is ideal, but not necessarily essential.

If this specification fits you . . . and most important, if you like the concept of the sales engineer as a creative individual, we would like to hear from you. A letter, collect call or wire to E. E. Johnson, our Director of Personnel at Stamford, Connecticut, is all that's needed. We'll do our best to arrange an interview at your convenience.



What do we mean by "creative" engineering? We'd like to send you a copy of "The Engineer as an Individual" . . . a new booklet which describes briefly our concept of the importance of the engineer to our worldwide operations.

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Consulting Engineers
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Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

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400 W. Madison St. Chicago 6, Ill.

EXPERIENCED HIGHWAY ENGINEERS

Established consulting firm in Western Illinois desirous of employing qualified personnel on permanent basis. Prefer Engineers under 35 experienced in design of highways and/or city street projects.

Reply giving full resume of experience, date available and salary requirements. Interviews will be arranged.

MISSMAN, STANLEY, FARMER & ASSOCIATES
Illinois Oil Building, Rock Island, Ill.

CIVIL ENGINEER

Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

Send resume of education and experience with salary requirements to:

P-3223, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

ENGINEERS

Civil Engineers with or without experience in hydraulics, soils, concrete design, contracts estimating, dams or construction for work on flood control projects in Pennsylvania. Salary to $9000. State experience, salary requirements and references.

P-4228—Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

BRIDGE & HIGHWAY

Designers, draftsmen, tracers, inspectors. Several permanent positions open with excellent opportunities.

FRANK L. EHASZ, CONSULTING ENGINEER
40-29 27th St. Long Island City 1, N. Y.

POSITIONS WANTED
(Continued from page 121)

Plant Engineer. Desires to make a change to a more comfortable climate. Fifteen years heavy experience in top level positions with outstanding firms. Experience in progress and production control, cost analysis, procurement, estimating, high temperature pressure piping design, thermal expansion problems including furnace manifolds, pressure vessel and flange design, welding and weld tests, sanitary waste disposal design, field liaison, supervision, coordination and drafting room practice. Minimum acceptable salary 10,000 dollars per year. Interested parties may secure a resume by writing on company stationery to PW-4447, Engineering News-Record.

Graduate Civil Eng., 30, experienced in high-way and concrete, practical background, desires responsible position with contractor. German graduation, no U. S. citizen. PW-4538, Engineering News-Record.

Maintenance Superintendent. Heavy Earth-moving & Paving Equipment. Preventive Maintenance organizing and administration. 15 years experience. Presently engaged mid-west. Desires change to far west or west coast. PW-4517, Engineering News-Record.

Construction Executive or Field Superintend-ent 32 years experience, 15 years Area, Field Superintendent one Major Steel Erection Company all supervision, Bridges, Industrial, Commercial Buildings, Churches. Seek permanent connection. Available 30 days notice. PW-4519, Engineering News-Record.

Estimator. Reg. P.E. 25 years background in the const. field. Estimating, Quantity Surveys, Bidding, Buying, Sub-contractor Coordination, to supervision all types construction Management Capacity. PW-4627, Engineering News-Record.

Graduate Civil Engineer. Ten years construc-tion experience field & office work. Desire position as estimator with general contractor. Can handle complete job from take-off, pricing, purchasing & expediting. Prefer Mid-West but will consider other locations that offer good future. Reply PW-4629, Engineering News-Record.

Project Manager or Chief Estimator 25 yrs. experience in all phases of Industrial, Commercial and Institutional work including Gov't. Contracts. Location—Texas, Arizona, Louisiana preferred. Age 53—Permanent—Excellent References. PW-4602, Engineering News-Record.

Building Const. Field Supt: Industrial, com-mercial, institutional, churches, etc. Similar position in field desired, 25 years exp. can travel. Age 55. PW-4645, Engineering News-Record.

Earthwork Superintendent: Heavy Construc-tion, qualified, Experience, Superhighways, levees, cofferdams, field control, grading seeding, pile driving. PW-4647, Engineering News-Record.

Civil Engineer, BSCE, age 27. Desires posi-tion as structural engineer with consulting engineer in Florida. Able to analyze indeterminate structures. LTJG returning to civilian status after 3 years in Navy Civil Engineer Corps. PW-4652, Engineering News-Record.

Construction Executive sound experience all phases, bid to completion, buildings and heavy construction, available as project manager, chief estimator or similar position where scope and volume require top man. Now employed. Minimum $15,000. PW-4709, Engineering News-Record.

Tunnel Superintendent: 22 years experience excavation and concrete, including underground powerhouse. Available May 1st. Excellent following, speak Spanish, go anywhere. PW-4667, Engineering News-Record.

Crew of Engrs. & Draftsmen—Elec. Mech. Civil—completing 18 mo. petro-chem plant design. Available individually or as group. Box 2004, Borger, Texas.

Young Graduate Engineer B.S. Arch. E. de-sires field position on building construction with general contractor. Three years construction contract experience as a Navy CEC officer. One years experience as structural designer and draftsman. PW-4671, Engineering News-Record.

Civil Engineer, BCE, 29, 8 years varied ex-perience in design and construction of roads, tunnels and airports. Worked for Air Force overseas as construction planner. Desire opportunity in the states. PW-4676, Engineering News-Record.

POSITIONS WANTED

Bridges—Construction Methods & Estimates. Consulting Service, Fee Basis, 19 years experience, PW-4678, Engineering News-Record.

Rock Supt. or Drill Foreman, 25 yr. experi-ence in heavy construction, available now, will travel, references, PW-4673, Engineering News-Record.

Structural Engineer and architect, with 25 years experience in design of large industrial projects and public buildings, in reinforced concrete and steel, seeks similar position in the Southwest. PW-4675, Engineering News-Record.

General Supt. P.C.C. 38 yrs. old. Supt. 15 yrs. Want interest in P.C. concrete highway paving Co. in exchange for supervisory services. Prefer west of Mississippi. Steadily employed. PW-4694, Engineering News-Record.

POSITIONS WANTED

Hydro-Electric Designer, MSCE 19 yrs. exp. Structural, Soil, Hydraulics, $850. Available from May 1 to Oct. 1. PW-4695, Engineering News-Record.

Executive engineer, age 34, desires position in Latin America. Presently employed in Germany, salary $10,500 plus free housing. Previous experience in Peru and Egypt. Familiar with highway, airport, and public housing construction. Married, one child. PW-4701, Engineering News-Record.

Architectural Engineer—Wealth of building and bridge experience; design and specifications. Mature, responsible. Location desired —Pennsylvania, Maryland, Delaware, New Jersey. PW-4700, Engineering News-Record.

Prefer Colorado or New Mexico—Soils and Paving Engineer, 10 years experience design and construction. Highways and Airfields. PW-4699, Engineering News-Record.

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(Classified Advertising)

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REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

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Contract Disputes and Public Relations Serv-ice offered for Contractors—Owners—Security Companies—Backed by many years experience in construction and negotiation of contracts. SS-4506, Engineering News-Record.

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Construction Engineer with $10,000 seeking Engineer or experienced Supt. with equal amount to invest in proposed new Construction Co. to operate in South East, with home office to be in Alabama. BO-4619, Engineering News-Record.

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Structural Steel Detailing. Hip and Valley, checking by licensed Engineers. 30 years experience. Neatness-Speed-Accuracy. CWW-4514, Engineering News-Record.

WORK WANTED

Structural Steel Detailing, prompt service. Designed if requested. Harrison Engineering Co., P. O. Box 1688, New Orleans, La.

Design and Drafting Service to Contractors, Builders, Industry by Registered Architects. All types of buildings. Located in Northern Ohio. Reasonable rates. Free estimates, WW-4548, Engineering News-Record.

Established engineering firm now has Field Survey Parties available anywhere in Midwest. WW-4698, Engineering News-Record.

PERSONAL

Bobby Livesay desires to locate his father W. J. Livesay, Shovel Oper. Anyone knowing his whereabouts, notify him. Box 242, Graysville, Tenn.

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ARCHITECTURAL ENGINEERING
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WILSON Engineering Corp
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Used concrete batch plants

to meet Corps of Engineers specification. Capacity of 500 cubic yards in eight hours, individual weigh batcher for all aggregates, automatic weighing and recording and two tilting type mixers, 2 yard capacity each.

Contact E. V. LANE CORPORATION
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WANTED

Used model 16 Espen Lucas Column Facer, or used 30" or 36" Rotary Column Planer

MUSHOGIE IRON WORKS
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ALLIS CHALMERS HD 10 DIESEL 1950
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A Very Good Buy At Only $3250
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1 each 70' 6" wide x 760' long x 39' 4" under span, FOB Albany, N. Y.

Drawings, details available without obligation.

$165 a ton

FS-4710, Engineering News-Record, Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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K-595 Link Belt Drag, 75', 2½ yd.
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802 Lima Cranes
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54-B Comb. Dragline-Crane
22-B Comb. Shovel-Crane
25 Northwest Comb. Shovel-Drag
80-D Northwest 2½ yd. Shovel
44 Lima 1 yard Backhoe
LS-85 Link Belt 1 yard Shovel
320 General ¾ yard Shovel
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1241 Searles Road, Toledo 7, Ohio *Phone:* FRanklin 1611
We also have a complete stock of structural and plates to service your small requirements

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LIMA 1201 with 85-ft. Boom, 3 Yd. Page Bucket, Cummins Diesel Engine, New 1950. Good Condition. PRICED TO SELL. F.O.B. Cars.
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We assure you our prices will be the best obtainable.

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TRUCK MIXER
Used as Demonstrator for short time.
Excellent Condition.
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This Construction Business

Two quotes from the addresses of The Moles Award winners at the dinner in their honor in New York, Feb. 6, belong in a construction anthology.

Said Guy Atkinson, "Construction is hazardous and interesting. I have been in it for 60 years, and can report that there is always trouble somewhere."

And from Lou Perini, whose joint-venturing has been as extensive as anyone's, "There is nothing wrong with joint-venturing if you have heart—and enough confidence in your partner to let him spend a million dollars of your money without telling you why."

The Economic Climate

For the first twelve weeks of this year public construction is up 18% while private construction, greatly influenced by housing, is down 40% (see page 21).

The fact, however, that both commercial and industrial building are also noticeably behind the same period in 1957 may seem to lend support to the pessimism being expressed by some economic soothsayers. Yet only to a small degree can this pessimism be viewed with concern, since all forecasters, in predicting an overall construction gain for the year, took a drop in private awards into account. ENR's prediction of a 7% rise may have to be shaved if Capehart-type housing does not live up to expectations, but there should still be an overall gain.

Optimism that construction in 1957 will exceed 1956 rests on a number of factors.

In the first place current percentage drops in private construction are related to the highest period of activity in 1956. From May onward, the relationship will look better. Coupled with this, however, and of much more significance, are changes for the better in the economic climate.

The money squeeze is lessening. Construction costs exhibit an encouraging stability, with the ENR indexes showing little net change compared to seven months ago. Capital investment planning by business still sets 1957 goals higher than 1956. Federal budget paring has not seriously entered the realm of public works where, in fact, the departmental requests are far from excessive. State and municipal capital investment is on the increase aided by improvement in the bond market under the stimulus of willingness to assume higher interest rates. And in this same general area, there is still a good possibility that Congress will do something to improve the interest rate situation in the housing field.

All of these considerations point to an improving economic climate in which construction can flourish. Most certainly there is no sign of a 1929-type depression in the offing in this existing climate. As the McGraw-Hill Department of Economics pointed out in a recent study, the 1929 trouble stemmed from a stock market spree in which the total volume of sales on the New York Stock Exchange was 1¼ times the gross national product. In 1956, stock sales were only about 7% of GNP. Today it is a real business activity, high wages and substantial purchasing and investing power that creates the boom.

The economic climate is good, and is improving. That augers well for construction. There is more cause for optimism than pessimism.

Competition for Tollroads

Early opponents of toll turnpikes frequently expressed fears that the construction of such facilities would militate against the modernization of certain toll-free roads because of the competition they might afford. The answer from the tollroad advocates was that this would never happen. However, it has happened in Ohio, where directors of the Ohio Turnpike have objected to a proposal for modernization of Route 18 between Akron and Youngstown.

Here is a serious problem, which is apt to occur elsewhere since not all of the new turnpikes are developing traffic as fast as was anticipated. It would be a mistake, resulting in a net economic loss, to cause these tollroads to fail financially. For the most part they are located where modern traffic facilities are badly needed. Invariably, they were promoted by or with the blessing of the state highway departments themselves, and the private investors, who bought the bonds, relieved the taxpayers of costs they otherwise would have had to shoulder.

These are telling arguments favoring the turnpikes against unfair competition from toll-free highways. The crux of the problem is in determining what is unfair. Obviously, many existing toll-free roads must be modernized, and the justifiable needs of local communities should not be neglected just to force traffic to use less convenient toll facilities. Each situation will have to be resolved on its merits, but a prime consideration should be to avoid creating unfair competition.

The tollroads form valuable links in the highway net. And with so many other parts of this network needing modernization, it would be a mistake to spend tax money in duplicating existing facilities unless traffic requirements make it necessary. In that case, of course, there can be no unfair competition.

This question of competition between tollroads and toll-free roads serves to highlight the fact that tollroads do not fit well into a sound plan for developing the nation's highways. They were a useful expedient, furnishing the country with over 3,000 miles of modern highways long before they could have been provided in any other way. But they represent an expedient that should be avoided whenever possible. Fortunately, the new highway program is a powerful aid in this direction.

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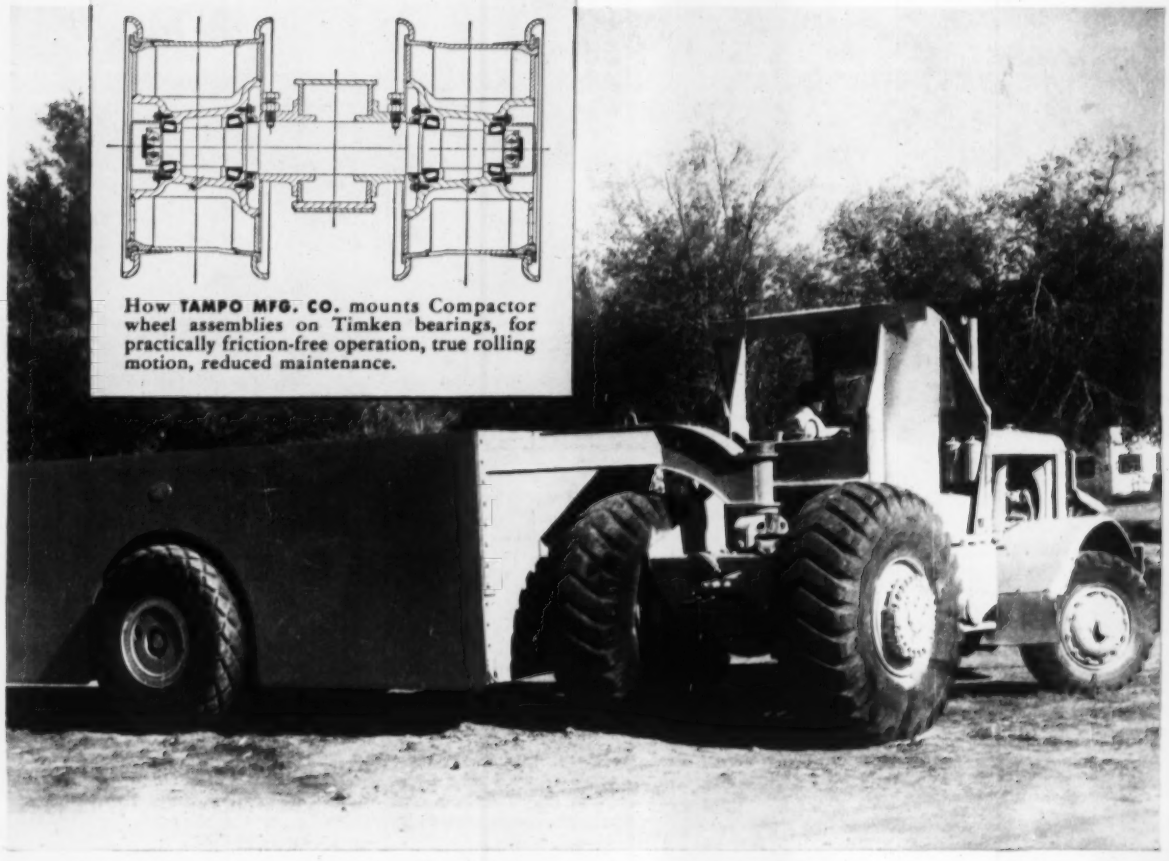

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This symbol on a product means its bearings are the best.

TIMKEN

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TAPERED ROLLER BEARINGS ROLL THE LOAD